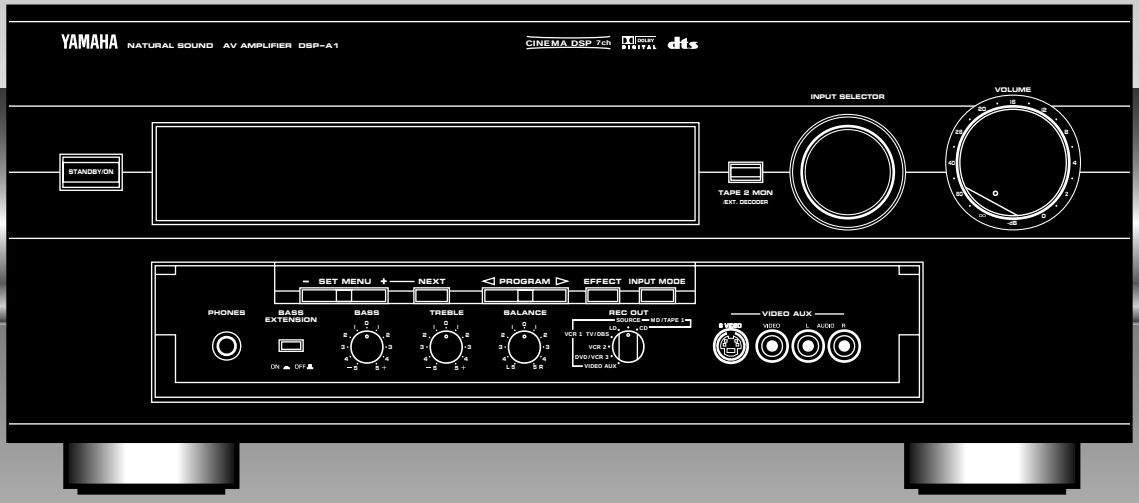
UCA

YAMAHA

DSP-A1

Natural Sound AV Amplifier
Amplificateur audiovisuel "Son Naturel"



OWNER'S MANUAL
MODE D'EMPLOI

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

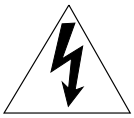
IMPORTANT
Please record the serial number of this unit in the space below.

Model:

Serial No.:

The serial number is located on the rear of the unit.
Retain this Owner's Manual in a safe place for future reference.

- Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

SAFETY INSTRUCTIONS

1 Read Instructions – All the safety and operating instructions should be read before the unit is operated.

2 Retain Instructions – The safety and operating instructions should be retained for future reference.

3 Heed Warnings – All warnings on the unit and in the operating instructions should be adhered to.

4 Follow Instructions – All operating and other instructions should be followed.

5 Water and Moisture – The unit should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

6 Carts and Stands – The unit should be used only with a cart or stand that is recommended by the manufacturer.

6A A unit and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the unit and cart combination to overturn.

7 Wall or Ceiling Mounting – The unit should be mounted to a wall or ceiling only as recommended by the manufacturer.

8 Ventilation – The unit should be situated so that its location or position does not interfere with its proper ventilation. For example, the unit should not be situated on a bed, sofa, rug, or similar surface, that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

9 Heat – The unit should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.

10 Power Sources – The unit should be connected to a power supply only of the type described in the operating instructions or as marked on the unit.

11 Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the unit.

12 Cleaning – The unit should be cleaned only as recommended by the manufacturer.

13 Nonuse Periods – The power cord of the unit should be unplugged from the outlet when left unused for a long period of time.

14 Object and Liquid Entry – Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the unit.

15 Damage Requiring Service – The unit should be serviced by qualified service personnel when:

- **A.** The power-supply cord or the plug has been damaged; or
- **B.** Objects have fallen, or liquid has been spilled into the unit; or
- **C.** The unit has been exposed to rain; or
- **D.** The unit does not appear to operate normally or exhibits a marked change in performance; or
- **E.** The unit has been dropped, or the cabinet damaged.

16 Servicing – The user should not attempt to service the unit beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

17 Power Lines – An outdoor antenna should be located away from power lines.

18 Grounding or Polarization – Precautions should be taken so that the grounding or polarization is not defeated.

SPECIAL NOTES FOR FCC COMPOSITE DEVICE (for US customers only)

This device is a composite system. The digital device component may not cause harmful interference.

FCC INFORMATION (for US customers only)

1. **IMPORTANT NOTICE : DO NOT MODIFY THIS UNIT!**
   This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.
2. **IMPORTANT :** When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.
3. **NOTE :** This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices.
   This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices.

Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Electronics Corp., U.S.A. 6660 Orangethorpe Ave, Buena Park, CA 90620.

The above statements apply ONLY to those products distributed by Yamaha Corporation of America or its subsidiaries.

We Want You Listening For A Lifetime (for US customers only)

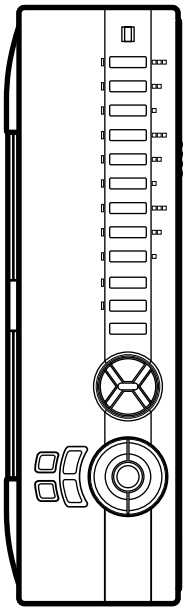
YAMAHA and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion – and, most importantly, without affecting your sensitive hearing.

Since hearing damage from loud sounds is often undetectable until it is too late, YAMAHA and the Electronic Industries Association's Consumer Electronics Group recommend you to avoid prolonged exposure from excessive volume levels.

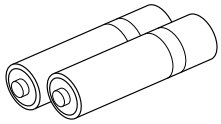
SUPPLIED ACCESSORIES

After unpacking, check that the following parts are included.

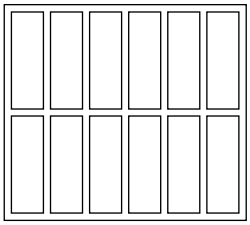
Remote Control Transmitter



Batteries (size AA, R6, UM-3)



User function stickers



Thank you for selecting this YAMAHA AV Amplifier.

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  Main: 110W + 110W (8Ω) RMS Output Power, 0.015% THD, 20–20,000 Hz
  Center: 110W (8Ω) RMS Output Power, 0.015% THD, 20–20,000 Hz
  Rear: 110W + 110W (8Ω) RMS Output Power, 0.015% THD, 20–20,000 Hz
  Front: 35W + 35W (8Ω) RMS Output Power, 0.05% THD, 1 kHz
- **Digital Sound Field Processor**
- **Dolby Digital (AC-3) Decoder**
- **Dolby Pro Logic Surround Decoder**
- **DTS Decoder**
- **CINEMA DSP: Theater-like Sound Experience by the Combination of YAMAHA DSP Technology and Dolby Surround or DTS**
- **Automatic Input Balance Control for Dolby Pro Logic Surround**
- **Test Tone Generator for Easier Speaker Balance Adjustment**
- **Speaker Output Mode Changing Capability**
- **"SET MENU" Mode which Provides You with 12 Titles of Setting Changes and Adjustments for Using This Unit in the Best Condition in Your Audio/Video System**
- **BASS EXTENSION Switch for Reinforcing Bass Response**
- **On Screen Display Function Helpful in Controlling This Unit**
- **REC OUT Selector which is Independent of Input Source Selection**
- **SLEEP Timer**
- **Digital Audio Signal Terminals: 5 OPTICAL Inputs, 3 COAXIAL Inputs, 1 DOLBY DIGITAL (AC-3) RF Input, 1 OPTICAL Output**
- **6 Channel Audio Signal Input Terminals for Connecting with an External Audio Signal Decoder etc.**
- **Video Signal Input/Output Capability (Including S Video Connections)**
- **"Learning" Remote Control Transmitter**

CAUTION : READ THIS BEFORE OPERATING YOUR UNIT.

1. To assure the finest performance, please read this manual carefully. Keep it in a safe place for future reference.
2. Install this unit in a cool, dry, clean place – away from windows, heat sources, sources of excessive vibration, dust, moisture and cold. Avoid sources of humming (transformers, motors). To prevent fire or electrical shock, do not expose the unit to rain or water.
3. Never open the cabinet. If something drops into the set, contact your dealer.
4. Do not use force on switches, controls or connection wires. When moving the unit, first disconnect the power plug and the wires connected to other equipment. Never pull the wires themselves.
5. The openings on the cabinet assure proper ventilation of the unit. If these openings are obstructed, the temperature inside the cabinet will rise rapidly. Therefore, avoid placing objects against these openings, and install the unit in well-ventilated condition. Make sure to allow a space of at least 10 cm behind, 10 cm on the both sides and 30 cm above the top panel of the unit. Otherwise it may not only damage the unit, but also cause fire.
6. The voltage to be used must be the same as that specified on this unit. Using this unit with a higher voltage than that which is specified is dangerous and may result in a fire or other type of accident causing damage. YAMAHA will not be held responsible for any damage resulting from use of this unit with a voltage other than that which is specified.
7. Digital signals generated by this unit may interfere with other equipment such as tuners, receivers or TVs. Move this unit farther away from such equipment if interference is observed.
8. Always set the VOLUME control to "– ∞" before starting the audio source play. Increase the volume gradually to an appropriate level after playback has been started.
9. Do not attempt to clean the unit with chemical solvents; this might damage the finish. Use a clean, dry cloth.
10. Be sure to read the "TROUBLESHOOTING" section regarding common operating errors before concluding that the unit is faulty.
11. When not planning to use this unit for long periods of time (ie., vacation, etc.), disconnect the AC power plug from the wall outlet.
12. To prevent lightning damage, disconnect the AC power plug and antenna cable when there is an electrical storm.
13. Grounding or polarization – Precautions should be taken so that the grounding or polarization of an appliance is not defeated.
14. Do not connect an audio equipment to the AC outlet on the rear panel if the equipment requires more power than the outlet is rated to provide.

This unit is not disconnected from the AC power source as long as it is connected to the wall outlet, even if this unit itself is turned off. This state is called the standby mode. In this state, this unit is designed to consume a very small quantity of power.

Voltage Selector (China and General Models only)
The voltage selector on the rear panel of this unit must be set for your local main voltage BEFORE plugging into the AC main supply.
Voltages are 110/120/220/240 V AC, 50/60 Hz.

FREQUENCY STEP switch (China and General Models only)
Because the interstation frequency spacing differs in different areas, set the FREQUENCY STEP switch (located at the rear) according to the frequency spacing in your area. Before setting this switch, disconnect the AC power plug of this unit from the AC outlet.

FOR CANADIAN CUSTOMERS

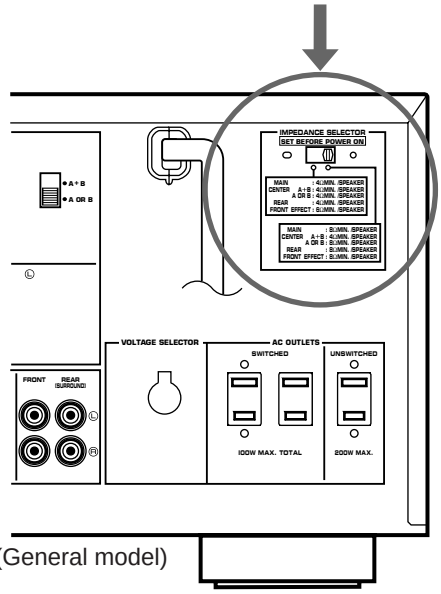
TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT AND FULLY INSERT.

THIS CLASS B DIGITAL APPARATUS MEETS ALL REQUIREMENTS OF THE CANADIAN INTERFERENCE-CAUSING EQUIPMENT REGULATIONS.

WARNING
Do not change the IMPEDANCE SELECTOR switch setting while the power to this unit is on, otherwise this unit may be damaged.

IF THIS UNIT FAILS TO TURN ON WHEN THE STANDBY/ON SWITCH IS PRESSED;
The **IMPEDANCE SELECTOR** switch may not be set to either end closely. If so, set the switch to either end closely.

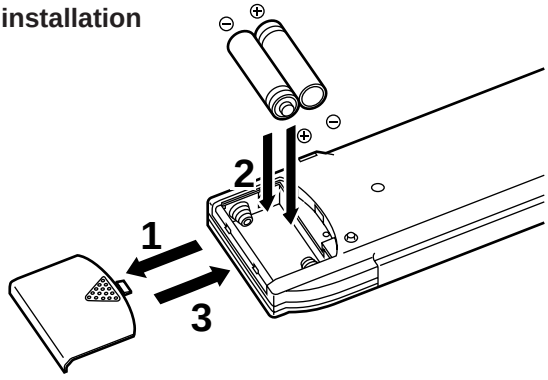
IMPEDANCE SELECTOR



(General model)

NOTES ABOUT THE REMOTE CONTROL TRANSMITTER

Battery installation



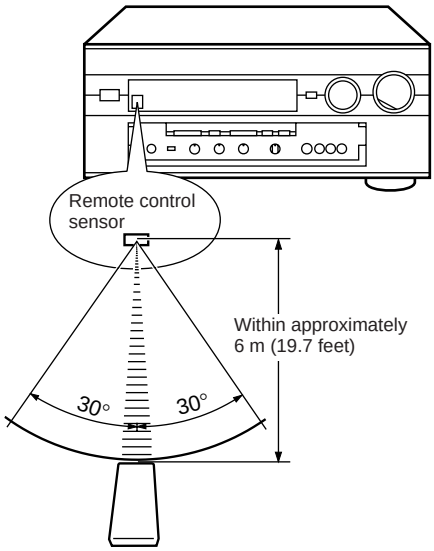
Battery replacement

If you find that the remote control transmitter must be used closer to the main unit, the batteries are weak. Replace both batteries with new ones.

Notes

- Use only AA, R6, UM-3 batteries for replacement.
- Be sure the polarities are correct. (See the illustration inside the battery compartment.)
- Remove the batteries if the remote control transmitter will not be used for an extended period of time.
- If batteries leak, dispose of them immediately. Avoid touching the leaked material or letting it come in contact with clothing, etc. Clean the battery compartment thoroughly before installing new batteries.
- After you change batteries, make sure to press the **RESET** button inside the battery compartment.

Remote control transmitter operation range



Notes

- There should be no large obstacles between the remote control transmitter and the main unit.
- If the remote control sensor is directly illuminated by strong lighting (especially an inverter type of fluorescent lamp etc.), it might cause the remote control transmitter not to work correctly. In this case, reposition the main unit to avoid direct lighting.

PROFILE OF THIS UNIT

This unit incorporates a sophisticated, multi-program digital sound field processor. The processor allows you to electronically expand and change the shape of the audio sound field from both audio and video sources, creating a theater-like experience in your listening room. This unit has a total of 12 digital sound field processor (DSP) modes. You can create an excellent audio sound field by selecting a suitable sound field (this will, of course, depend on what you will be listening to), and adding desired adjustments.

In addition, this unit incorporates a Dolby Pro Logic Surround decoder and Dolby Digital (AC-3) decoder for multi-channel sound reproduction of Dolby Surround encoded video sources, and a DTS decoder for multi-channel sound reproduction of DTS-encoded audio and video sources. The operation of the Dolby Pro Logic Surround, Dolby Digital (AC-3) or DTS decoder can be controlled by selecting a corresponding DSP program including combined operations of DSP and Dolby Pro Logic Surround, DSP and Dolby Digital (AC-3), or DSP and DTS.

This unit also features a built-in automatic input balance control. This always assures you the best performance without manual adjustment.

Digital Sound Field Processing

What is it that makes live music so good? Today's advanced sound reproduction technology lets you get extremely close to the sound of a live performance, but chances are you'll still notice something missing, the acoustic environment of the live concert hall. Extensive research into the exact nature of the sonic reflections that create the ambience of a large hall has made it possible for Yamaha engineers to bring you this same sound in your own listening room, so you'll feel all the sound of a live concert.

Furthermore, our technicians, armed with sophisticated measuring equipment, have even made it possible to capture the acoustics of a variety of actual concert halls, jazz clubs, theaters, etc. from around the world, to allow you to accurately recreate any one of these live performance environments, all in your own home.

Dolby Pro Logic Surround

This unit employs a Dolby Pro Logic Surround decoder similar to professional Dolby Stereo decoders used in many movie theaters. By using the Dolby Pro Logic Surround decoder, you can experience the dramatic realism and impact of Dolby Stereo theater sound in your own home.

Dolby Pro Logic employs a four-channel-five-speaker system. The Pro Logic Surround system divides the input signal into four levels: the left and right main channels, the center channel (used for dialog), and the rear surround sound channel (used for sound effects, background noise, and other ambient noises). The center channel allows listeners seated in even less-than-ideal positions to hear the dialog originating from the action on the screen while experiencing good stereo imaging.

Dolby Surround is encoded on a lot of sound tracks of pre-recorded video tapes, laserdiscs, and some TV/cable broadcasts. When you play a source encoded with Dolby Surround on this unit, the Dolby Pro Logic Surround decoder decodes the signal and distributes the surround-sound effects.

Dolby Digital (AC-3)

Dolby Digital (AC-3) is a new generation of Dolby Surround sound system which is a spatial sound processing format developed for 35 mm film-movies by employing low bit-rate audio coding.

Dolby Digital (AC-3) is a digital surround sound system that provides completely independent multi-channel audio to consumers. In multi-channel form, Dolby Digital (AC-3) provides five full range channels in what is sometimes referred to as a "3/2" configuration: three front channels (left, center and right), plus two surround channels. A sixth bass-only effect channel is also provided for output of LFE (low frequency effect), or low bass effects that are independent of other channels. (This is called the "subwoofer channel" or "LFE channel".) This channel is counted as 0.1, thus giving rise to the term 5.1 channels in total.

Compared to Dolby Pro Logic that is referred to a "3/1" system (left front, center, right front and just one surround channel), Dolby Digital (AC-3) features two surround channels, called stereo or split surrounds, each offering the same full range fidelity as the three front channels.

By using the built-in Dolby Digital (AC-3) decoder, you can experience the dramatic realism and impact of Dolby Stereo Digital theater sound in your own home.

Sound of wide dynamic range reproduced by the five full range channels presents listeners much excitement that has never been experienced before. Precise sound orientation by the discrete digital sound processing expands realism that the original movie possesses.

Dolby Digital (AC-3) forms 5.1 channels as mentioned on the previous page, and moreover, it can also form fewer channels, for example 2 channel stereo and monaural. You may be able to find some 2 channel stereo and/or monaural sources encoded with the Dolby Digital (AC-3) in a market.

If a 2 channel stereo source encoded with the Dolby Digital (AC-3) is played back as the input source and the DSP program No. 10, 11 or 12 is used at the same time, the source is first decoded with the Dolby Digital (AC-3) decoder into 2 channels, and then decoded with the Dolby Pro Logic decoder. In such a case, only the decoding of Dolby Pro Logic is shown on the display panel of this unit.

Laserdisc and DVD are home audio formats that could benefit from Dolby Digital (AC-3). In the near future, Dolby Digital (AC-3) will also be applied to DBS, CATV and HDTV. The ongoing release of Dolby Stereo Digital theatrical films now underway will provide an immediate source of Dolby Digital (AC-3) encoded video software.

Manufactured under license from Dolby Laboratories Licensing Corporation. “Dolby”, “AC-3”, “Pro Logic”, and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
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DTS Digital Surround

The DTS (Digital Theater Systems) system was developed to replace analog soundtracks of movies with six discrete channels of digital soundtracks, and now, it is installed in many theaters around the world. The DTS digital playback system changed the way we experienced movies in theaters with six discrete channels of superb digital audio.

The DTS technology, through intense research and development, made it possible to deliver a similar encode/decode discrete technology to home audio surround-sound entertainment.
The DTS Digital Surround is an encode/decode system which delivers six channels of master-quality, 20-bit audio; technically 5.1 channels, which means 5 full-range (left, center, right and two surround) channels, plus a subwoofer (LFE) channel (as “0.1”). It is compatible with the 5.1 speaker configurations that are currently available for home theater systems

The DTS Digital Surround algorithm is designed to encode the six channels of 20-bit audio onto any laserdisc or compact disc (or DVD in the near future) with considerably less data-compression.

By using the DTS decoder built into this unit, you can experience the dramatic realism and impact of the DTS installed theater’s high quality sound in your own home.

Laserdisc and compact disc (and DVD in the near future) are home audio format within which DTS can represent its high quality multi-channel audio. (In addition to movies on laserdiscs, many exciting new multi-channel music recordings will also become available in the form of DTS-encoded compact discs.)

Manufactured under license from DTS Technology LLC. Additionally licensed under the following US Patent 5,451,942 & National Patent applications derived from PCT/US95/00959. Additional U.S. and Foreign Patents pending. “DTS”, “digital surround”, and “coherent acoustics” logos are trademarks of DTS Technology LLC. All rights reserved.

CINEMA DSP: Dolby Surround + DSP / DTS + DSP

Dolby Surround sound system and DTS system show their full ability in a large movie theater, because movie sounds are originally designed to be reproduced in a large movie theater using many speakers. It is difficult to create a sound environment similar to that of a movie theater in your listening room, because the room size, materials of inside walls, the number of speakers, etc. of your listening room are much different from those of a movie theater.

Yamaha DSP technology made it possible to present you with nearly the same sound experience as that of a large movie theater in your listening room by compensating for lack of presence and dynamics in your listening room with its original digital sound fields combined with Dolby Surround sound or DTS Digital Surround sound.

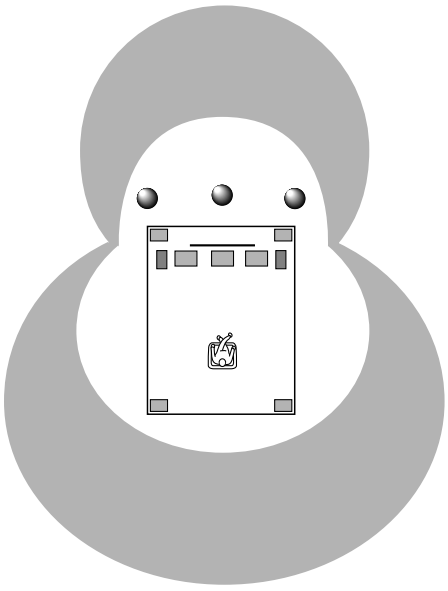
CINEMA DSP

The YAMAHA “CINEMA DSP” logo indicates those programs are created by the combination of YAMAHA DSP technology and Dolby Surround or DTS.

Dolby Pro Logic + 2 Digital Sound Fields

Digital sound fields are created on the presence side and the rear surround side of the Dolby Pro Logic Surround-decoded sound field respectively. They create a wide acoustic environment and emphasize surround-effect in the room, letting you feel much presence as if you were watching a movie in a popular Dolby Stereo theater.

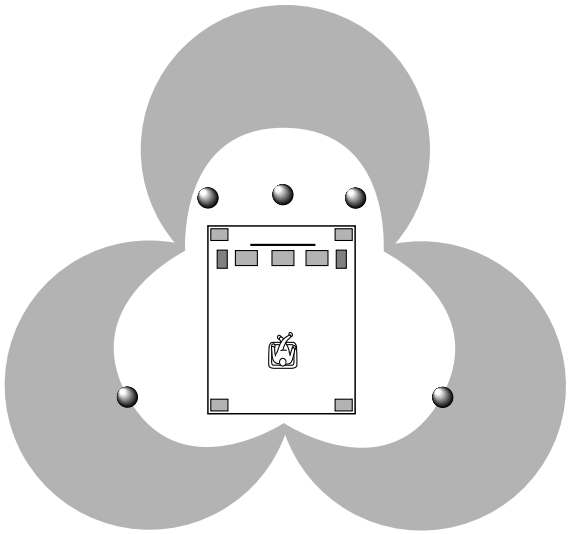
This combination is available when the digital sound field program No. 7, 8, 9, 10, 11 or “PRO LOGIC/Enhanced” of No. 12 is selected, and the input signal of source is analog, PCM audio or encoded with the Dolby Digital (AC-3) in 2-channels.



Dolby Digital (AC-3) or DTS + 3 Digital Sound Fields

Digital sound fields are created on the presence side and the independent left and right surround sides of the Dolby Digital (AC-3)-decoded or the DTS-decoded sound field respectively. They create a wide acoustic environment and much surround effect in the room without losing high channel separation. With wide dynamic range of Dolby Digital (AC-3) or DTS sound, this sound field combination lets you feel as if you were watching a movie in the newest Dolby Stereo Digital theater or DTS installed theater. This will be the most ideal home theater sound at the present time.

This combination is available when the digital sound field program No. 7, 8, 9, 10, 11 or “DOLBY DIGITAL (or DTS DIGITAL SUR.)/Enhanced” of No. 12 is selected, and the input signal of source is encoded with the Dolby Digital (AC-3) (except in 2-channels) or encoded with the DTS.



SPEAKER SETUP

Setting Up Your Speaker System

This unit has been designed to provide the best sound field quality with a full seven-speaker system setup, using a pair of main speakers to output main source sounds, two extra pairs of effect speakers to generate the sound field plus one center speaker for dialog. We therefore recommend that you use a seven-speaker setup. A four-speaker system using only one pair of effect speakers for the sound field will still provide impressive ambience and effects, however, and may be a good way to begin with this unit. You can always upgrade to the full seven-speaker system later. In the 4 or 5 speaker system, the Digital Sound Field Processing is still performed, but the main speakers are used for both the main channels and the front effect channels.

Use of the Center Dialog Speaker Is Recommended

When playing back a source with the Dolby Pro Logic decoded, or playing back a source which contains center-channel signals with the Dolby Digital (AC-3) or the DTS decoded, dialog, vocals etc. are output from the center channel. Therefore, if you want to maximize the performance of your Audio/Video home theater system, it is recommended that you use a center channel speaker.

If for some reason it is not practical to use a center speaker, it is possible to enjoy movie viewing without it. Best results, however, are obtained with the full system.

Use of a Subwoofer Expands Your Sound Field

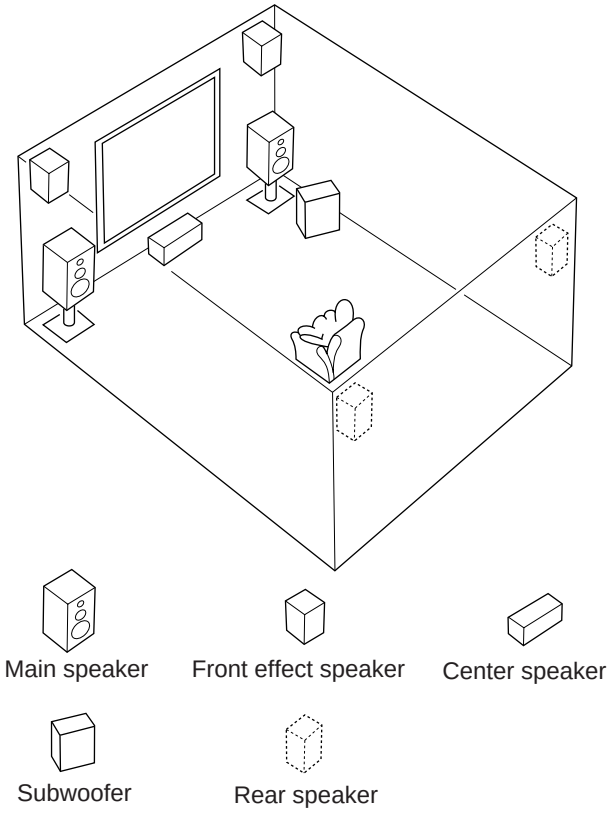
It is also possible to further expand your system with the addition of a subwoofer and amplifier. The use of a subwoofer is effective not only for reinforcing bass frequencies from any or all channels, but also for reproducing signals at the subwoofer channel with high fidelity during playing back a source with the Dolby Digital (AC-3) or the DTS decoded. You may wish to choose the convenience of a Yamaha Active Servo Processing Subwoofer System, which has its own built-in power amplifier.

Speakers and Speaker Placement

Your full seven-speaker system will require three speaker pairs: the MAIN SPEAKERS (your normal stereo speakers), the FRONT EFFECT SPEAKERS and the REAR SPEAKERS, plus the CENTER SPEAKER. You may also be using a SUBWOOFER.

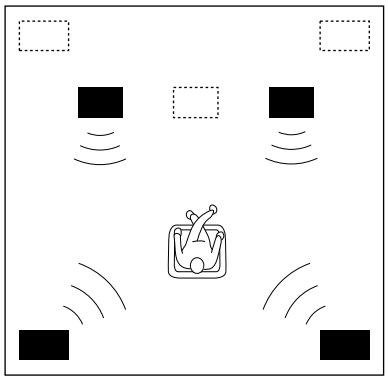
The MAIN SPEAKERS should be high performance models and have enough power handling capacity to accept the maximum output of your audio system.
Other speakers do not have to be equal to the MAIN SPEAKERS. For precise sound localization, however, it is ideal to use high performance models that can reproduce sounds in full range for the CENTER SPEAKER, the FRONT EFFECT and REAR SPEAKERS.

Place the MAIN SPEAKERS in the normal position.
Place the FRONT EFFECT SPEAKERS further apart than the MAIN SPEAKERS, on either side of and 0.5–1m behind and above the MAIN SPEAKER pair.
Place the REAR SPEAKERS behind your listening position. They should be nearly 1.8m up from the floor.
Place the CENTER SPEAKER precisely between the two MAIN SPEAKERS. (To avoid interference, keep the speaker above or below the television monitor, or use a magnetically shielded speaker.)
If using a SUBWOOFER, such as a Yamaha Active Servo Subwoofer System, the position of the speaker is not so critical because low bass tones are not highly directional.



Four Possible Types of Speaker System Configurations Recommended

4 Speaker System

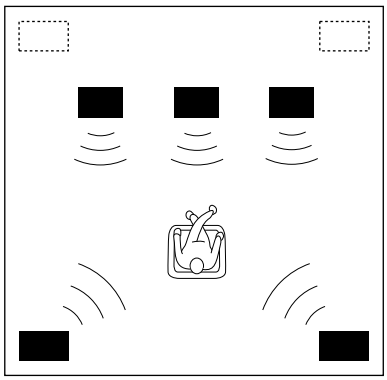


Simplest system.

You can enjoy widely diffused sound by only adding two additional speaker units at the rear.

1E. FRONT MIX—Set to ON-5ch. (See page 27.)
1A. CENTER SP—Set to NONE. (See page 26.)

5 Speaker System

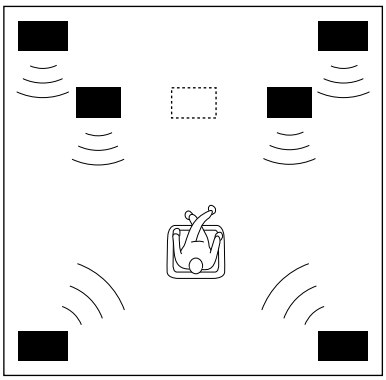


Good for Audio/Video sources.

By the use of center speaker, center sounds (dialog, vocals etc.) are precisely localized.

1E. FRONT MIX—Set to ON-5ch. (See page 27.)
1A. CENTER SP—Set to LRG or SML. (See page 26.)

6 Speaker System

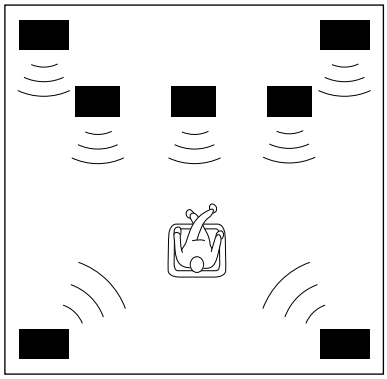


Good for sound fields from 2-channel stereo sources.

When a normal stereo source is played back with the sound field programs No. 1 through No. 6, a sound effect matching that of a 7-speaker system can be obtained. The addition of front left and right effect speakers produces a more effective sound field.

1E. FRONT MIX—Set to OFF-7ch. (See page 27.)
1A. CENTER SP—Set to NONE. (See page 26.)

7 Speaker System



This is the recommended speaker system, providing the best sound effects.

The rear speakers and the front effect speakers produces a 360-degree sound field, and the center speaker provides precise center localization.
You can experience the amazing YAMAHA “CINEMA DSP” sound fields completely with the 7 speaker system.

1E. FRONT MIX—Set to OFF-7ch. (See page 27.)
1A. CENTER SP—Set to LRG or SML. (See page 26.)

CONNECTIONS

Never plug in this unit and other components until all connections are completed.

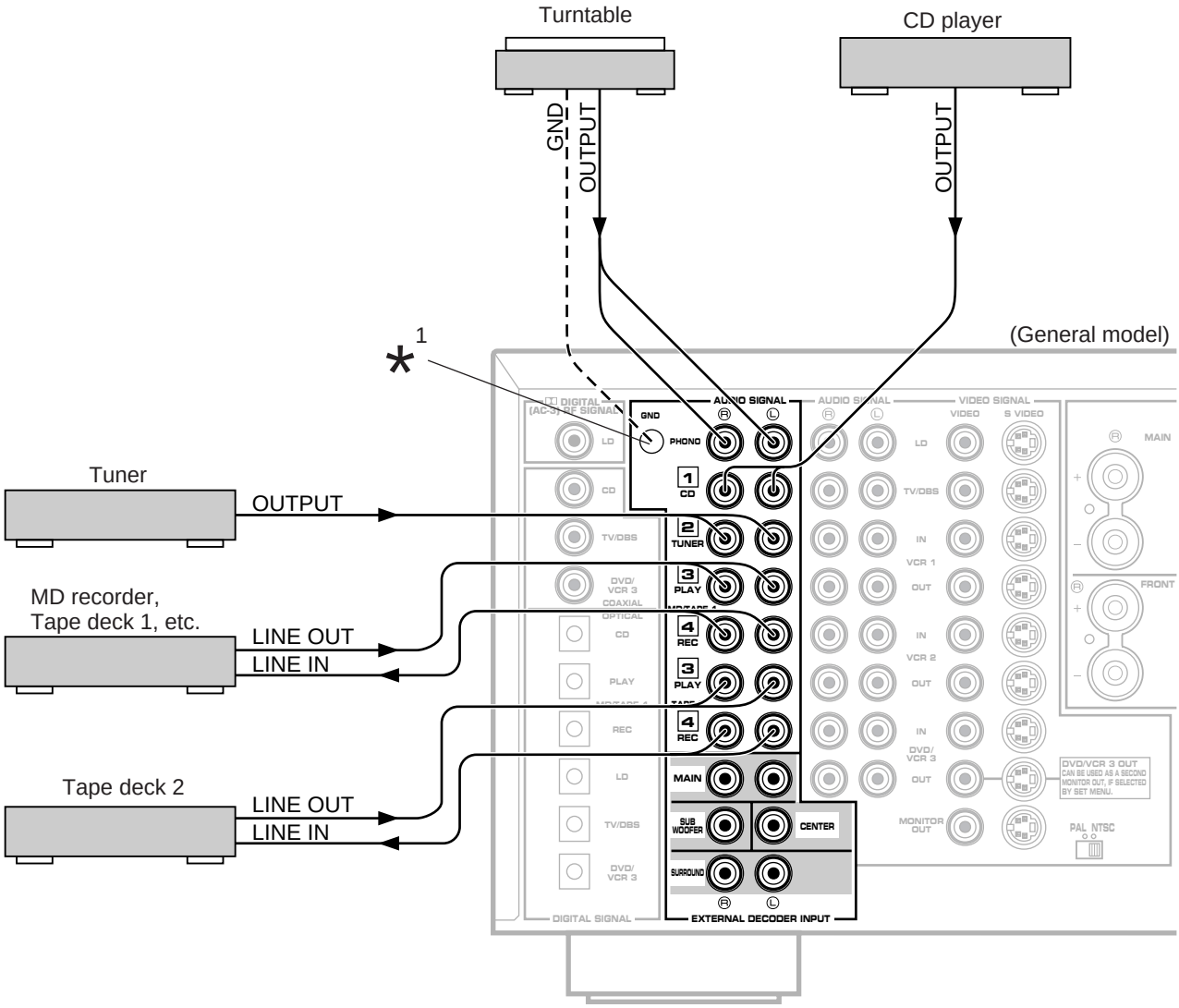
When making connections between this unit and other components, be sure all connections are made correctly, that is to say **L** (left) to **L**, **R** (right) to **R**, "**+**" to "**+**" and "**–**" to "**–**". Also, refer to the owner's manual for each component to be connected to this unit.

CONNECTING AUDIO/VIDEO SOURCE EQUIPMENT TO THIS UNIT

For connections with audio/video units, use RCA type pin plug cables with the exception described later.

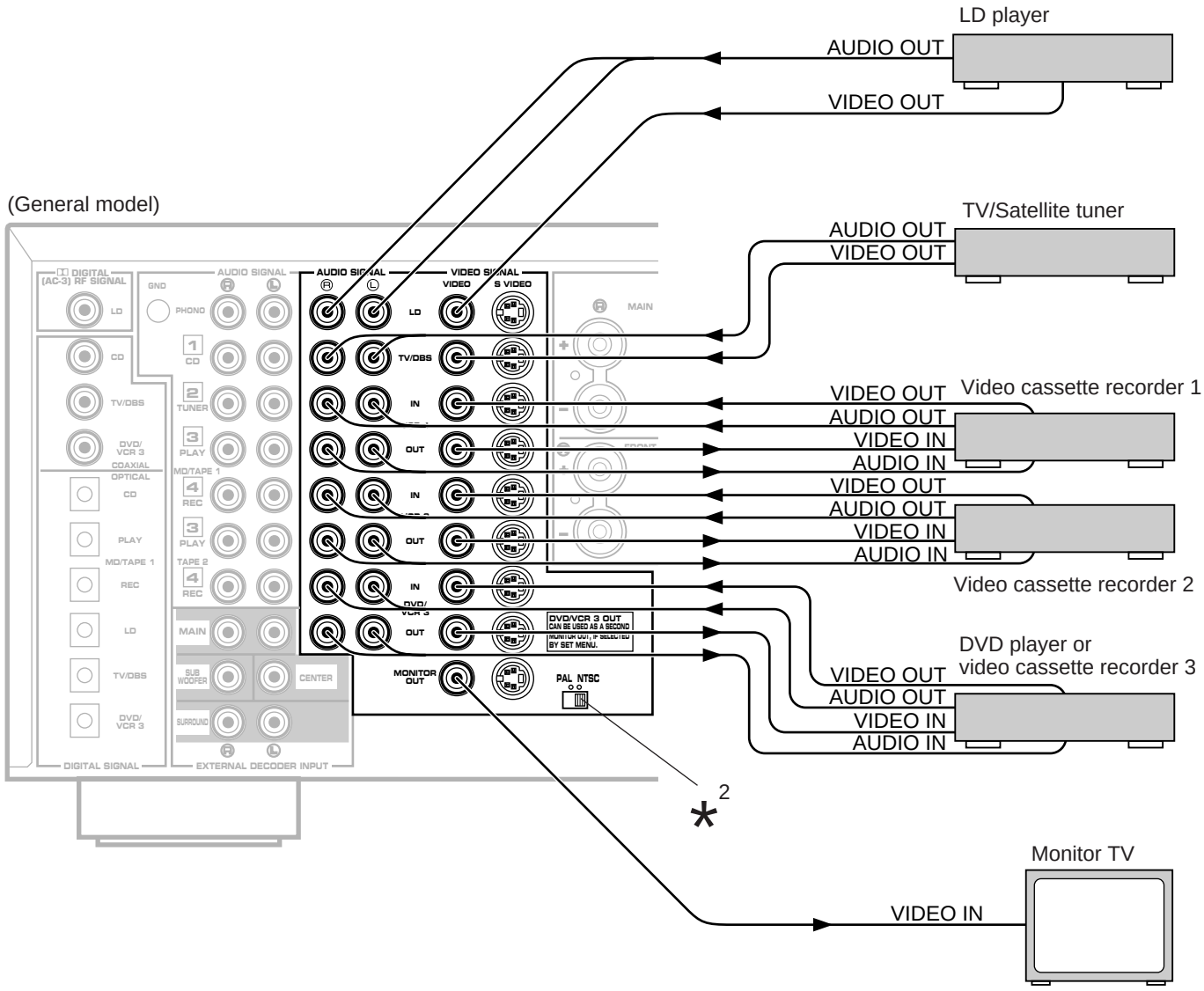
* If you have YAMAHA audio/video units numbered as 1, 2, 3, etc. on the rear panel, connections can be made easily only by connecting the output (or input) terminals of each unit to the same-numbered terminals of this unit.

BASIC CONNECTIONS (for Audio Units)



*1: **GND terminal (For turntable use)**
Connecting the ground wire of the turntable to the **GND** terminal will normally minimize hum, but in some cases better results may be obtained with the ground wire disconnected.

BASIC CONNECTIONS (for Video Units)



*2: PAL/NTSC switch (China and General models only)

This unit is designed for use with the NTSC and PAL television formats. Set this switch to the position for the format your monitor TV employs.

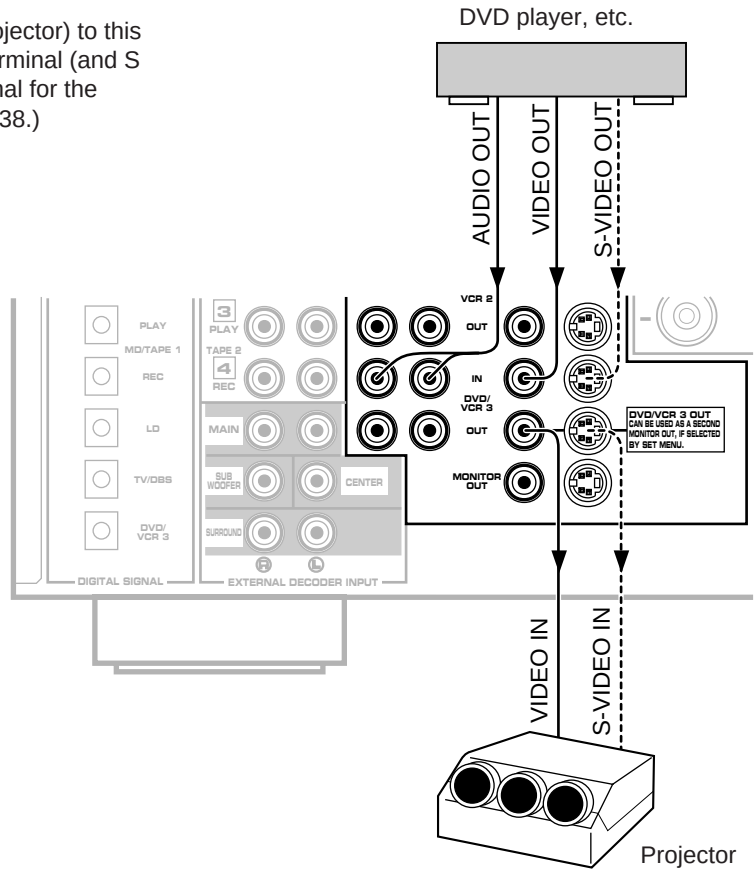
PAL: Outputs signals in the PAL format no matter which format (PAL or NTSC) of video signal is sent from an external video unit to this unit.
Set to this position if your monitor TV employs the PAL format.

NTSC: Outputs signals in the NTSC format no matter which format (PAL or NTSC) of video signal is sent from an external video unit to this unit.
Set to this position if your monitor TV employs the NTSC format.

Note
Be sure to input a video signal which employs the same format that your monitor TV employs, otherwise a picture will not be played back normally.

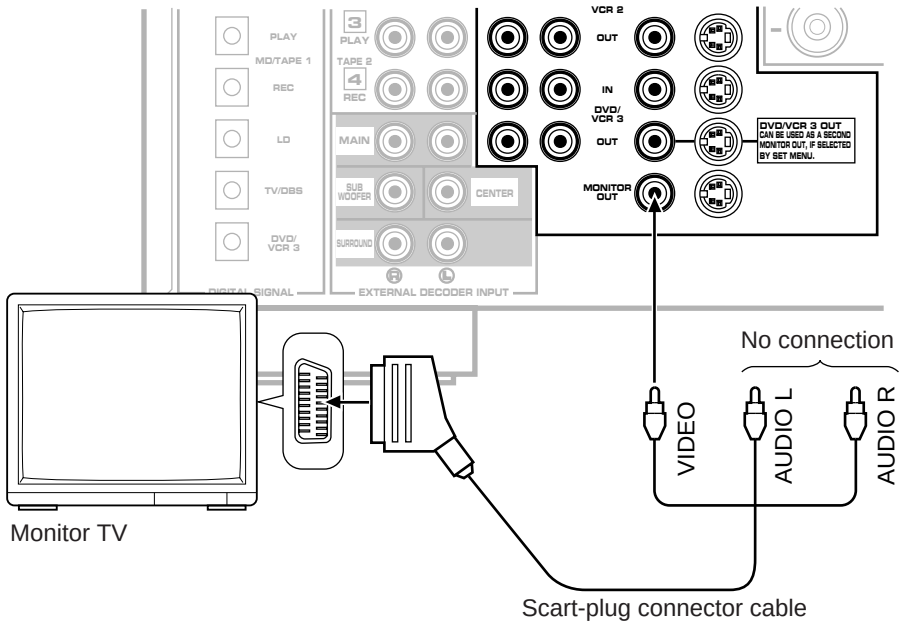
Note

If you wish to connect a second monitor TV (or a projector) to this unit, you can switch the DVD/VCR 3 VIDEO OUT terminal (and S VIDEO terminal also) to a second monitor out terminal for the connection with another monitor TV. (Refer to page 38.)



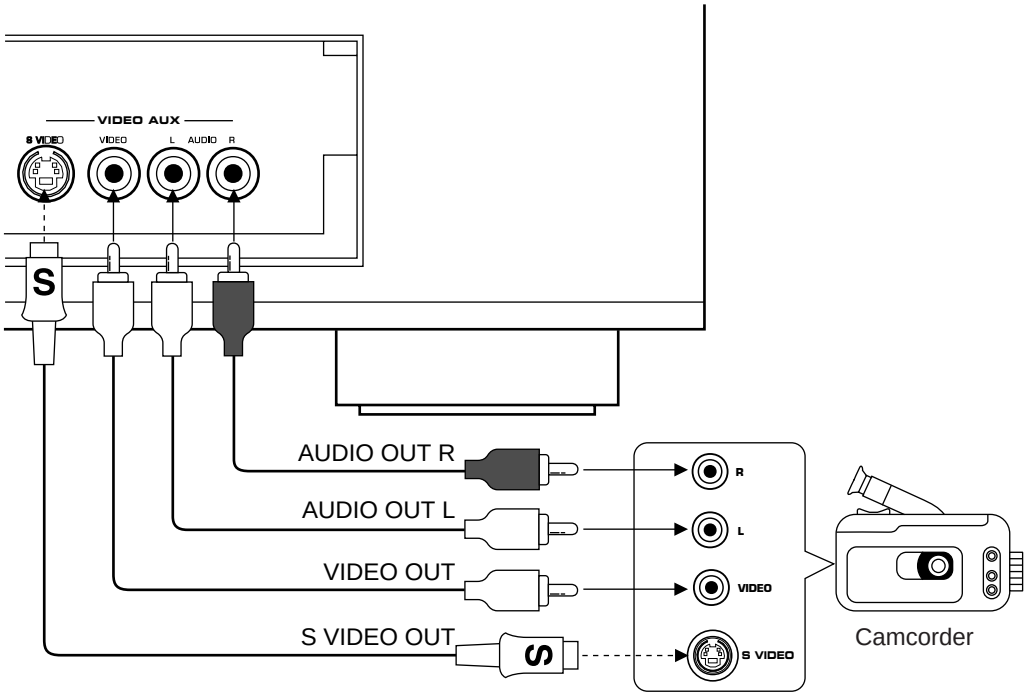
For connecting with a monitor TV that uses a 21 pin connector for input (for Europe and U.K. models)

Make a connection as figured below with a commercially available scart-plug connector cable.



■ Connecting to VIDEO AUX terminals (on the front panel)

These terminals are used to connect any video input source such as a camcorder to this unit.



■ Connecting to digital (OPTICAL and COAXIAL) terminals

If your CD player, MD recorder, LD player, DVD player, TV/satellite tuner, etc. are equipped with coaxial or optical digital audio signal output terminals, they can be connected to this unit's COAXIAL and/or OPTICAL digital signal input terminals.

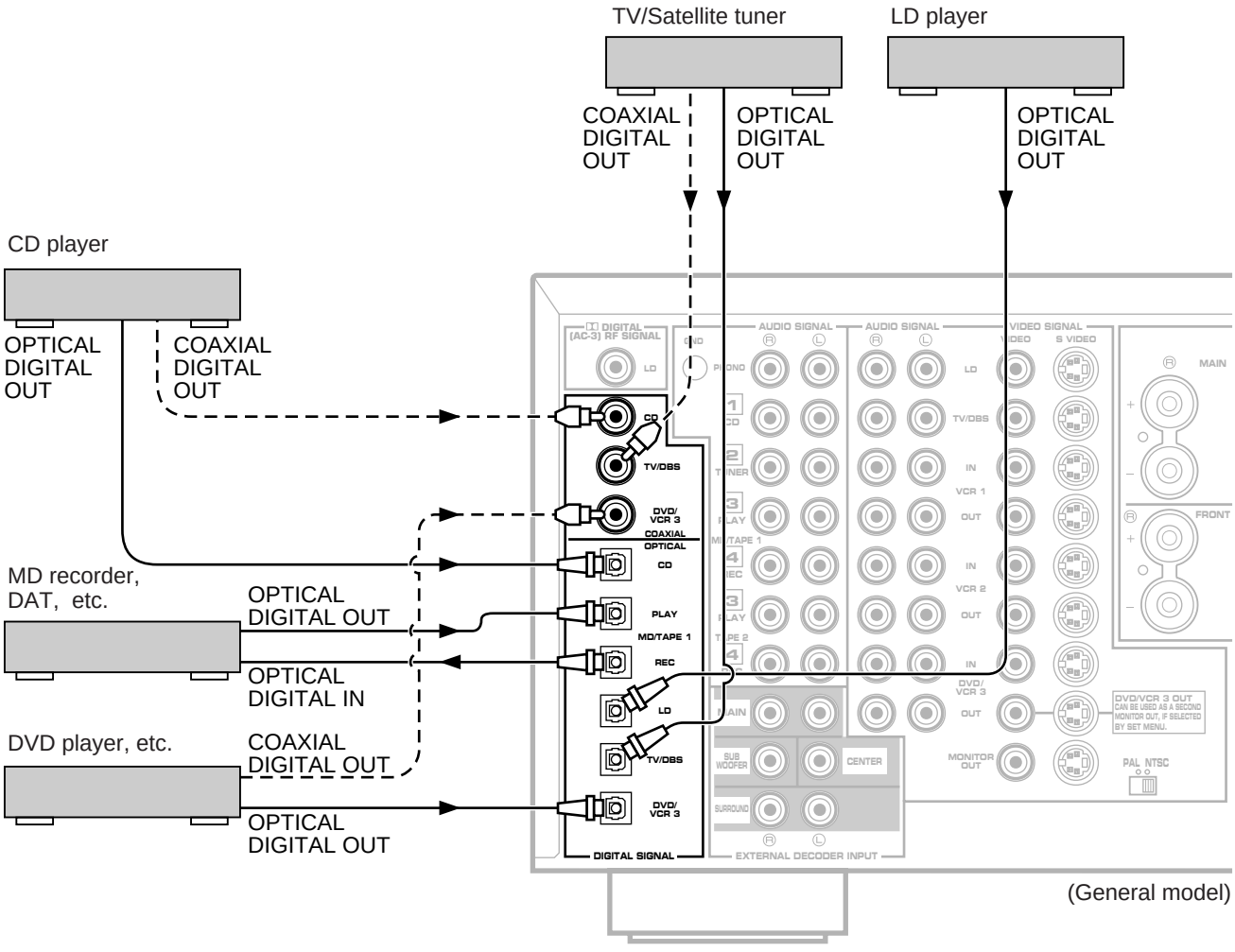
To make a connection between optical digital audio signal terminals, remove the cover from each terminal, and then connect them by using a commercially available optical fiber cable that conforms to EIAJ standards. Other cables might not function correctly.

Even if you connect an audio/video unit to the OPTICAL (or COAXIAL) terminal of this unit, you must keep the unit connected with the same named analog audio signal terminals of this unit, because digital signal cannot be recorded by a tape deck or VCR connected to only analog audio signal terminals of this unit. You can switch the selection of input signals between "digital" and "analog" easily. (See page 41 for details.)

* However, if you connect an MD recorder or DAT to this unit's OPTICAL MD/TAPE 1 PLAY and REC terminals, it can record input sources connected to this unit's OPTICAL digital signal input terminals.

Notes

- When you connect an audio/video unit to both of the digital and analog terminals of this unit, make sure to connect to both terminals of the same name.
- Be sure to attach the covers when the OPTICAL terminals are not being used, in order to protect the terminals from dust.
- All digital audio signal input terminals are applicable to the sampling frequency of 32 kHz, 44.1 kHz and 48 kHz.
- In order to make this unit perform a successful DTS-decoding, the DTS bitstream must not be altered, manipulated or corrupted in the process that it is sent from the DIGITAL OUT terminal of a unit playing back a source encoded with the DTS to a digital signal input terminal of this unit.



(General model)

■ Connecting to DOLBY DIGITAL (AC-3) RF output of the LD player

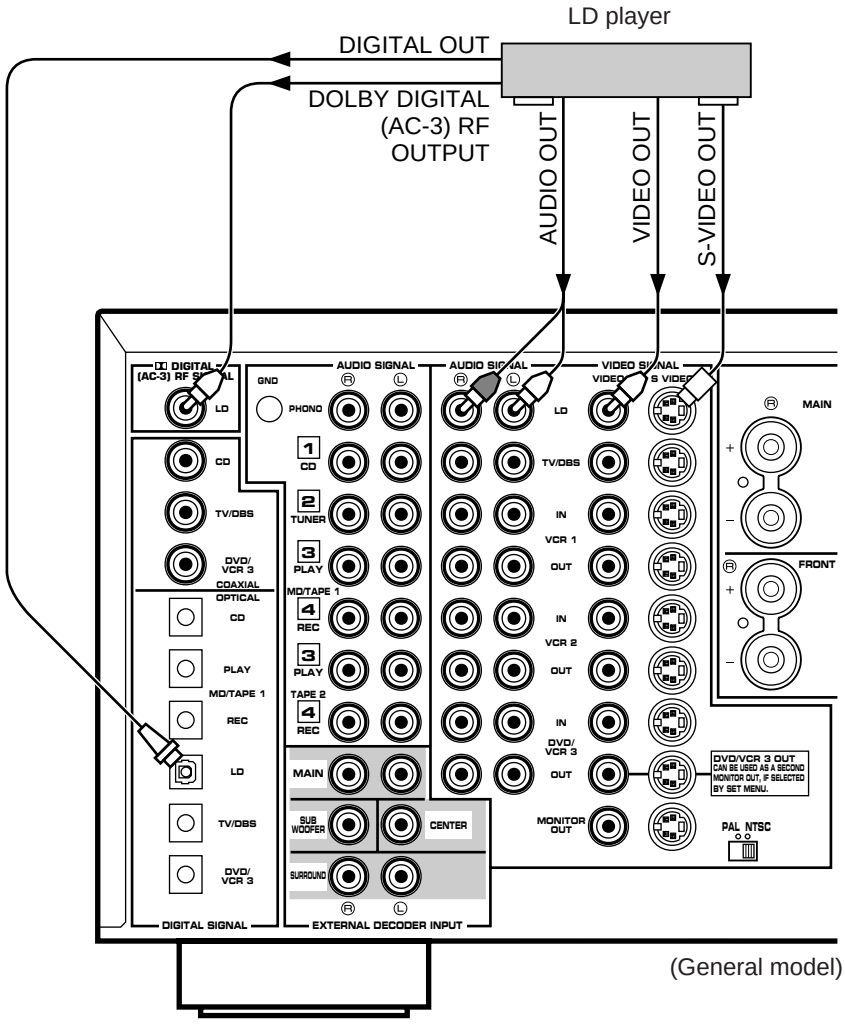
If your LD player has a DOLBY DIGITAL (AC-3) RF signal output terminal, connect it to this unit's DIGITAL (AC-3) RF SIGNAL input terminal. Audio signals encoded with the Dolby Digital (AC-3) are input to this unit by this connection.

* To play back an LD source with the Dolby Digital decoded, set the input mode of LD to "AUTO" or "AC-3 RF". (Refer to page 41 for details.)

It is also necessary to connect the LD player to this unit's OPTICAL digital audio signal input terminal and/or analog audio signal input terminals regardless of the DOLBY DIGITAL (AC-3) RF signal connection, for playing back an LD source with the Dolby Pro Logic Surround or the DTS decoded, or in normal stereo (or monaural).

Note

DOLBY DIGITAL (AC-3) RF audio input signal cannot be recorded by a tape deck, MD recorder or VCR. To record an LD source, the LD player must be connected to the OPTICAL digital audio signal input terminal and/or analog audio signal input terminals of this unit.



(General model)

■ Connecting to S VIDEO terminals

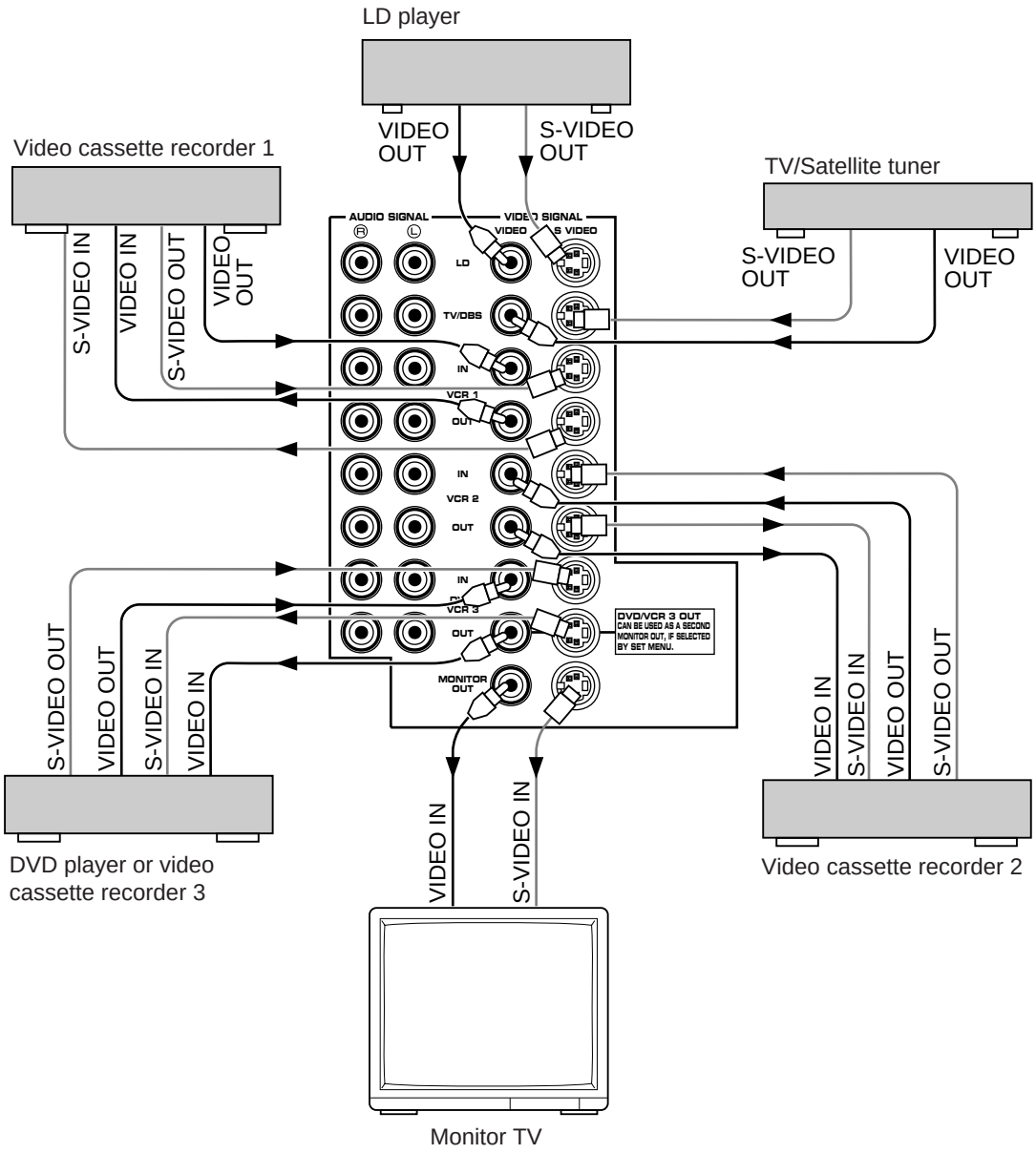
If your video cassette recorder, LD player, etc. and your monitor are equipped with “S” (high-resolution) video terminals, connect them to this unit’s S VIDEO terminals, and connect this unit’s S VIDEO MONITOR OUT terminal to the “S” video input of your monitor. Otherwise, connect the composite video terminals from your video cassette recorder, LD player, etc. to the VIDEO terminals of this unit, and connect this unit’s VIDEO MONITOR OUT terminal to the composite video input of your monitor.

Note

If video signals are sent to both S VIDEO input and VIDEO input terminals, the signals will be sent to their respective output terminals.

Notes about the Video superimpose

- If you watch a video source that is connected to both S VIDEO and VIDEO input terminals of this unit, signals of screen display information are output from only the S VIDEO MONITOR OUT terminal.
- When no video signal is input to either S VIDEO or VIDEO input terminals of this unit, signals of screen display information are output from both S VIDEO MONITOR OUT and VIDEO MONITOR OUT terminals with a color background.
  * For China and General models, if the PAL/NTSC switch on the rear panel is set to “PAL”, nothing will be output from either S VIDEO MONITOR OUT or VIDEO MONITOR OUT terminal in this case.

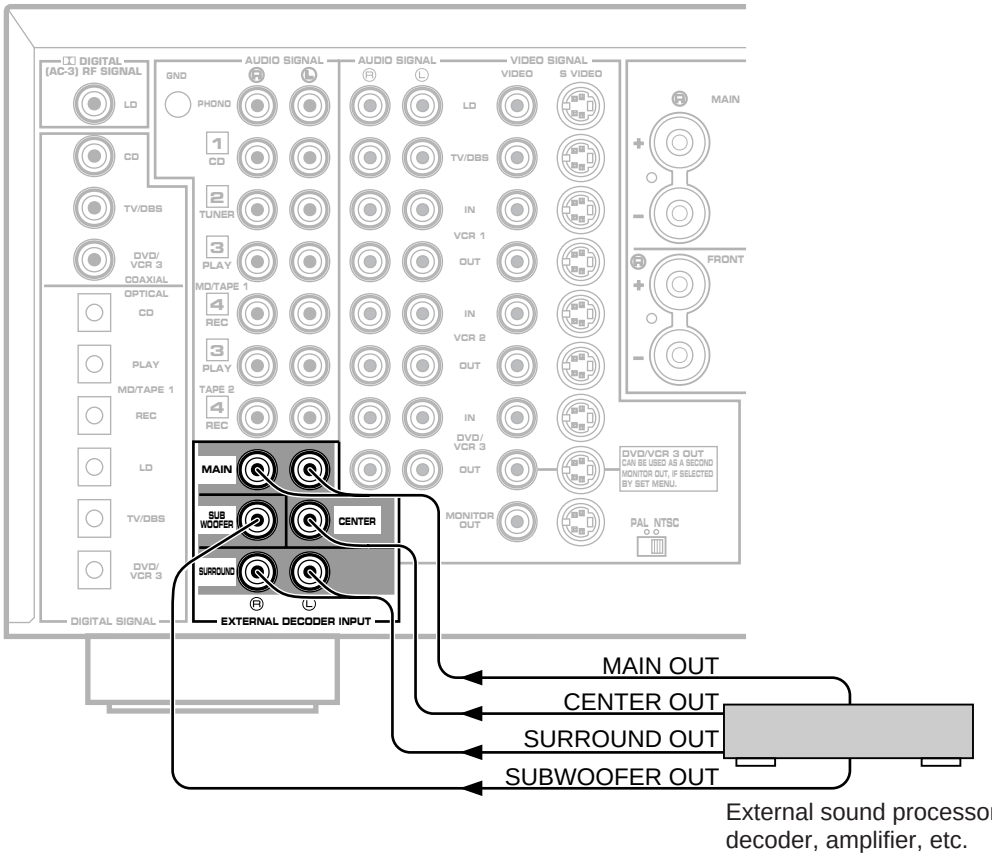


■ Connecting an external sound processor, decoder, amplifier, etc. to this unit

This unit is equipped with additional 6-channel audio signal input terminals (for left main, right main, center, left rear surround, right rear surround and subwoofer channels) available for inputting signals from your existing amplifier, sound processor, decoder, etc. to this unit.
To listen to a sound by reproducing signals input to these terminals, press the **TAPE 2 MON/EXT. DECODER** button on the front panel once or more so that “EXT. DECODER IN” appears on the display. By doing so, the signals input to these terminals are sent to the corresponding SPEAKERS terminals and OUTPUT terminals of this unit.

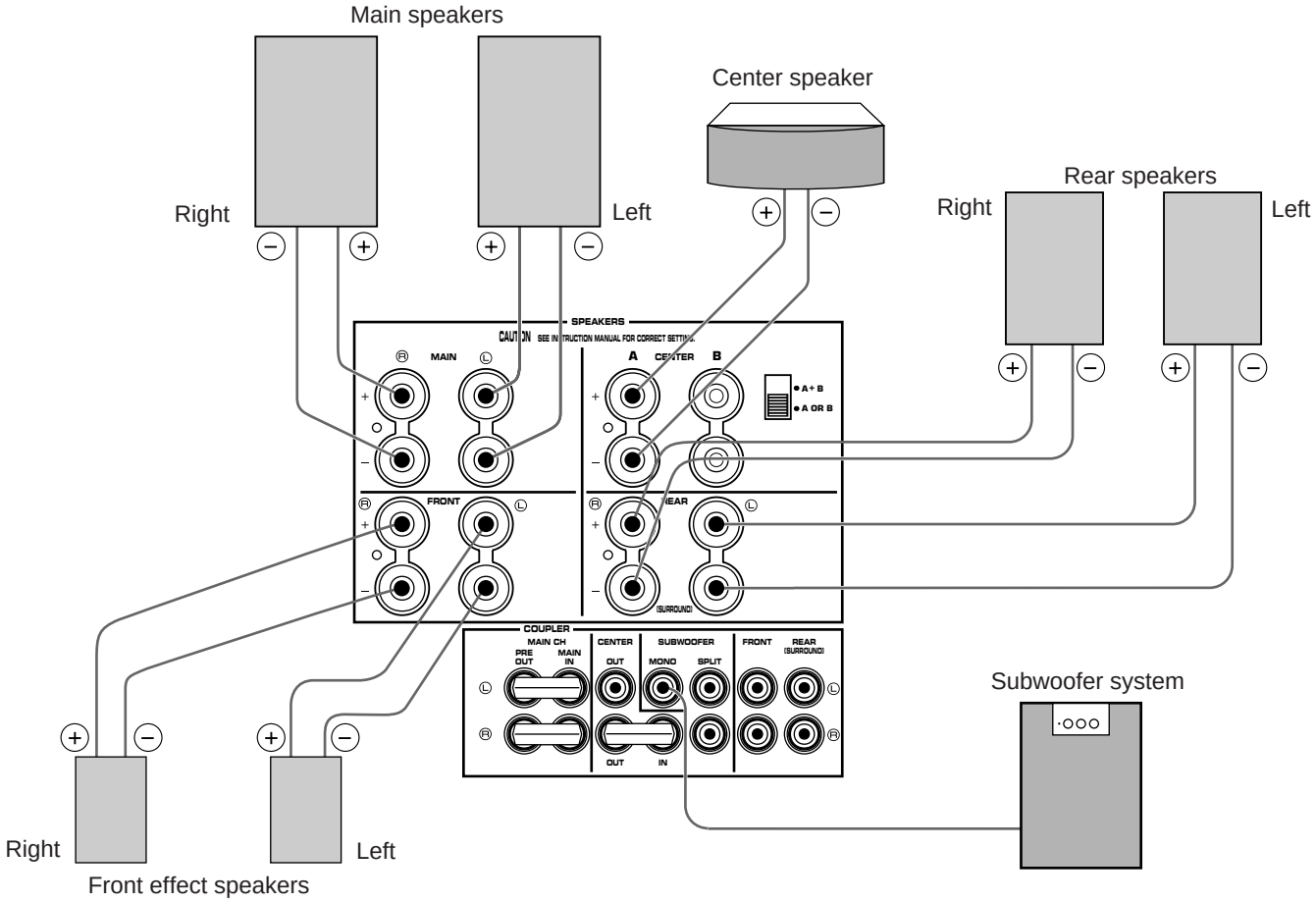
Note
When signals input to these terminals are selected, the digital sound field processor cannot be used.

(General model)



CONNECTING SPEAKERS

Use speakers with the specified impedance shown on the rear of this unit.



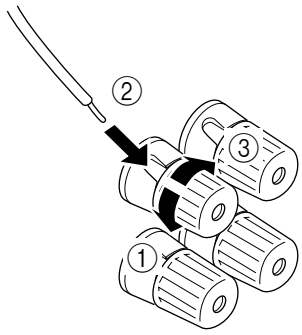
How to Connect:

Connect the **SPEAKERS** terminals to your speakers with wire of the proper gauge, cut as short as possible. If the connections are faulty, no sound will be heard from the speakers. Make sure that the polarity of the speaker wires is correct, that is the + and – markings are observed. If these wires are reversed, the sound will be unnatural and lack bass.

Caution

Do not let the bare speaker wires touch each other or any metal part of this unit. This could damage this unit and/or speakers.

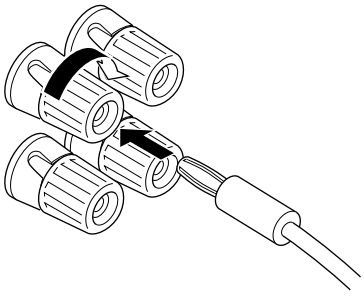
Red: positive (+)
Black: negative (–)



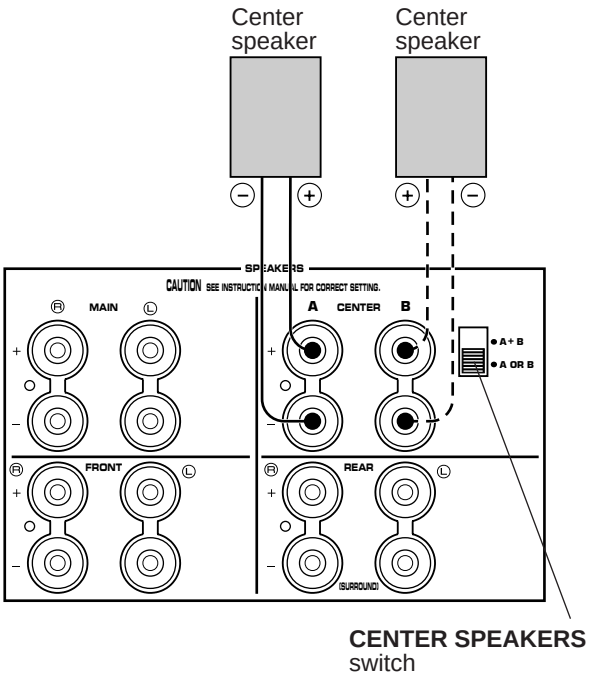
① Unscrew the knob.
② Insert the bare wire. [Remove approx. 5mm (1/4") insulation from the speaker wires.]
③ Tighten the knob and secure the wire.

<U.S.A., Canada, China, Australia and General models only>

Banana Plug connections are also possible. Simply insert the Banana Plug connector into the corresponding terminal.

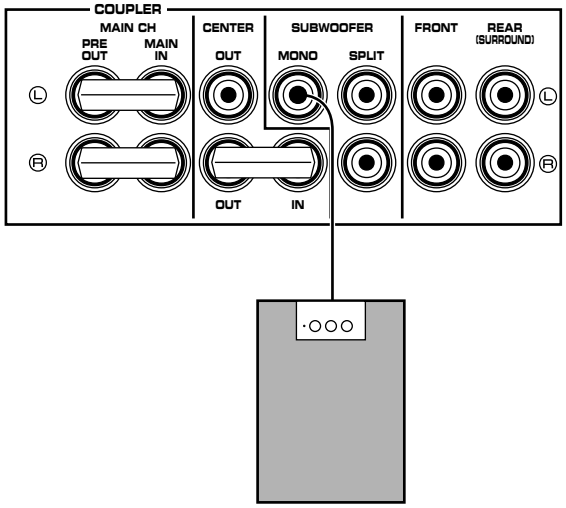


Note on center speaker connection:
One or two center speakers can be connected to this unit. If you cannot place the center speaker on or under the TV, it is recommended to use two center speakers and place them on both sides of the TV to orient the center sound at the center position. When using one center speaker, connect it to either the A or B terminals and set the **CENTER SPEAKERS** switch to “A OR B” (bottom position). When using two center speakers, connect them to the A and B terminals, and set the switch to “A + B” (top position).
If, however, you will not use a center speaker, be sure to set the function “1A. CENTER SP” in the SET MENU mode in the “NONE” position. (See page 26.)



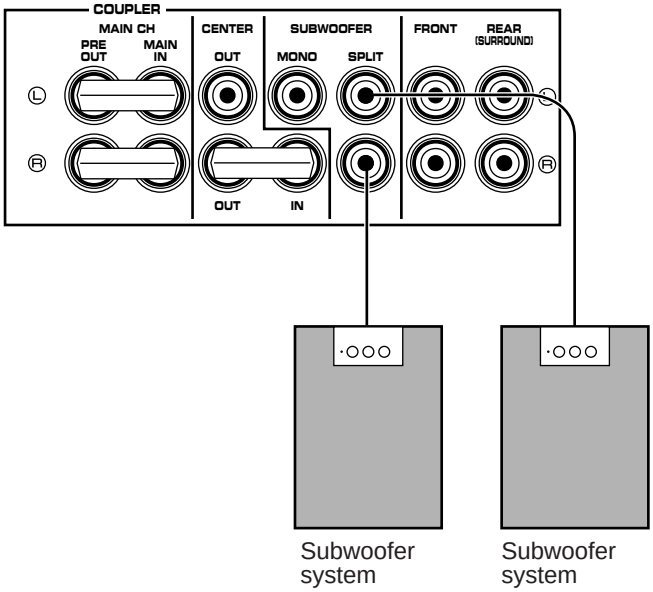
CENTER SPEAKERS switch

Note on a subwoofer connection:
You may wish to add a subwoofer to reinforce low frequencies or to output low bass sound from the subwoofer channel when reproducing discrete signals.
When using one subwoofer, connect the SUBWOOFER MONO terminal of this unit to the INPUT terminal of the subwoofer amplifier, and connect the speaker terminals of the subwoofer amplifier to the subwoofer.



Subwoofer system

If you wish to obtain more presence in your listening room, the use of two subwoofers is recommended. To connect two subwoofers to this unit, connect one SUBWOOFER SPLIT terminal to the INPUT terminal of the amplifier driving a subwoofer, and the other SUBWOOFER SPLIT terminal to the INPUT terminal of the amplifier driving the other subwoofer, and then connect each subwoofer to the corresponding amplifier.



Subwoofer system

Subwoofer system

With some subwoofers, including the Yamaha Active Servo Processing Subwoofer System, the amplifier and subwoofer are in the same unit.
(Refer to page 21 for details about the SUBWOOFER MONO/SPLIT terminals.)

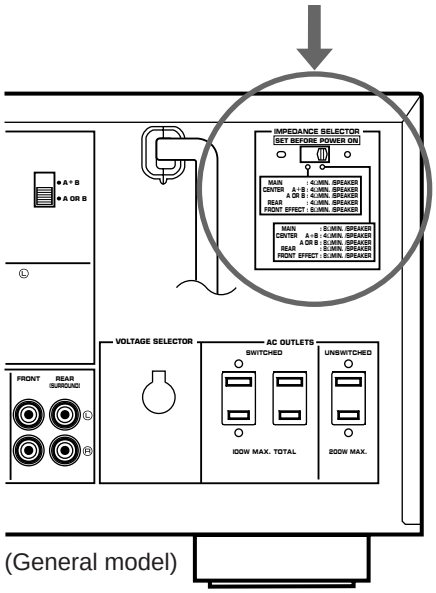
■ IMPEDANCE SELECTOR switch

Be sure to switch this only when the power to this unit is not on. Select the position whose requirements your speaker system meets.

WARNING
Do not change the IMPEDANCE SELECTOR switch setting while the power to this unit is on, otherwise this unit may be damaged.

IF THIS UNIT FAILS TO TURN ON WHEN THE STANDBY/ON SWITCH IS PRESSED;
The **IMPEDANCE SELECTOR** switch may not be set to either end closely. If so, set the switch to either end closely.

IMPEDANCE SELECTOR



(General model)

(Left position)

Rear: The impedance of each speaker must be 4Ω or higher.

Center: If you use two center speakers, the impedance of each speaker must be 4Ω or higher.
If you use one center speaker, the impedance of the speaker must be 4Ω or higher.

Main: The impedance of each speaker must be 4Ω or higher.

Front effect:
The impedance of each speaker must be 6Ω or higher.

(Right position)

Rear: The impedance of each speaker must be 8Ω or higher.

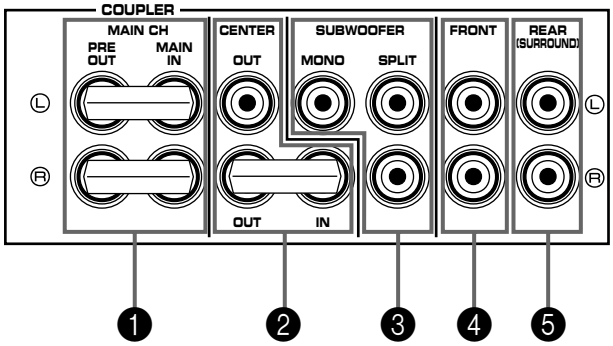
Center: If you use two center speakers, the impedance of each speaker must be 4Ω or higher.
If you use one center speaker, the impedance of the speaker must be 8Ω or higher.

Main: The impedance of each speaker must be 8Ω or higher.

Front effect:
The impedance of each speaker must be 8Ω or higher.

■ To drive main, center, front effect and/or rear speakers with external amplifiers

The speaker connections described on page 18 are fine for most applications. If for some reason, however, you wish to drive main, center, front effect and/or rear speakers with your existing amplifier, etc., the following terminals are available for connecting external amplifier(s) to this unit.



❶ MAIN CH PRE OUT/MAIN IN terminals

The PRE OUT terminals are for main channel line output, and the MAIN IN terminals are for line input to the built-in main channel amplifier. The PRE OUT and MAIN IN terminals must be connected with jumper bars when the built-in amplifier is used.
However, if you drive main speakers with an external stereo power amplifier, first remove the jumper bars, and then connect the input terminals of the external amplifier (MAIN IN or AUX terminals of an amplifier or a receiver) to the PRE OUT terminals. No connection is needed to the MAIN IN terminals.

* Output signals from the PRE OUT terminals are affected by the use of **BASS**, **TREBLE**, **BALANCE** controls and **BASS EXTENSION** switch.

❷ CENTER OUT/IN terminals

The CENTER OUT terminals are for center channel line output, and the CENTER IN terminal is for line input to the built-in center channel amplifier.
The lower side of CENTER OUT terminals and the CENTER IN terminal must be connected with a jumper bar when the built-in amplifier is used.
However, if you drive one or two center speakers with an external power amplifier (for each), first remove the jumper bar, and then connect the input terminal(s) of the external amplifier(s) to either or both CENTER OUT terminals. No connection is needed to the CENTER IN terminal.

❸ SUBWOOFER terminals

SUBWOOFER MONO terminal
When using a subwoofer, connect its amplifier input to this terminal. Frequencies below 90 Hz distributed from the main, center and/or rear channels are output from this terminal. Signals of LFE (low frequency effect) generated when the Dolby Digital (AC-3) or the DTS is decoded are also output if they are assigned to this terminal.

SUBWOOFER SPLIT terminals
When using two subwoofers, connect their amplifier inputs to these terminals. Low bass signals that are output from the SUBWOOFER MONO terminal are also output from these terminals. However, signals from the left main and left rear channels are output to the SPLIT L terminal, and signals from the right main and right rear channels are to the SPLIT R terminal separately.

❹ FRONT terminals

These terminals are for front effect channel line output. There is no connection to these terminals when you use the built-in amplifier.
However, if you drive front effect speakers with an external stereo power amplifier, connect the input terminals of the external amplifier (MAIN IN or AUX terminals of an amplifier or a receiver) to these terminals.

❺ REAR (SURROUND) terminals

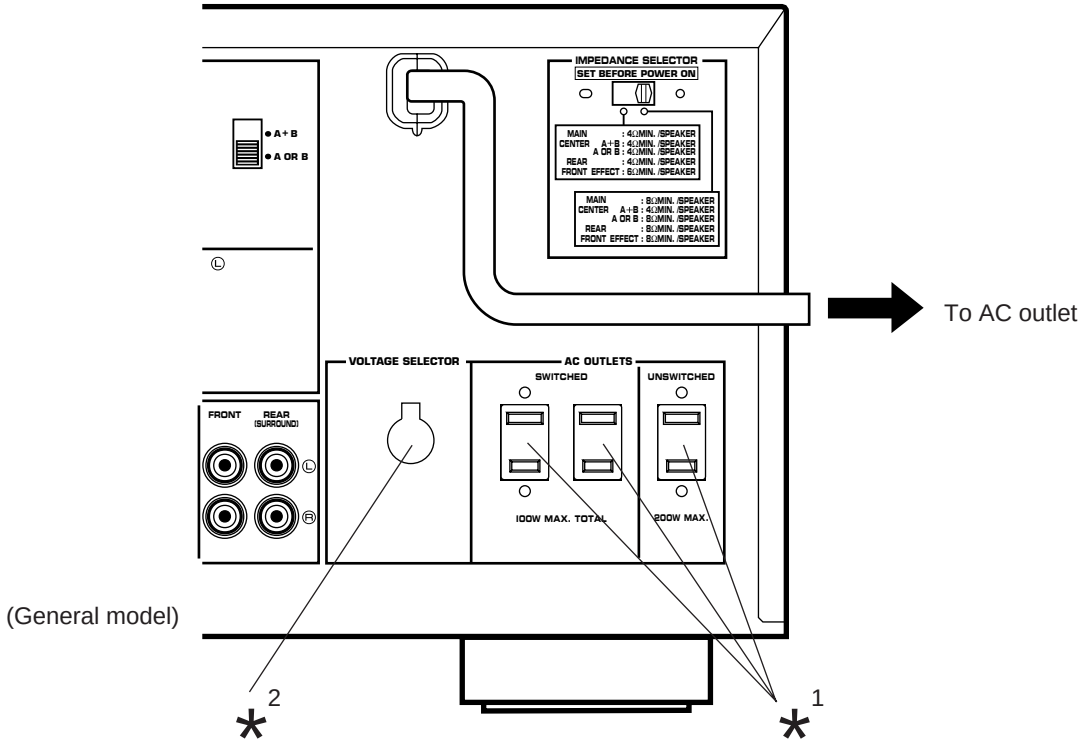
These terminals are for rear channel line output. There is no connection to these terminals when you use the built-in amplifier.
However, if you drive rear speakers with an external stereo power amplifier, connect the input terminals of the external amplifier (MAIN IN or AUX terminals of an amplifier or a receiver) to these terminals.

Notes

- Output level of signals from all of these terminals are adjusted by the use of **VOLUME** control on the front panel or **MASTER VOLUME** keys on the remote control transmitter.
- If an external power amplifier is connected to the FRONT or REAR output terminals, the corresponding internal amplifier will be turned off and no output will be available at the SPEAKERS terminals.

PLUGGING IN THIS UNIT

- After completing all connections, plug the AC power cord into a convenient AC outlet.
- Unplug the AC power cord from the AC outlet if this unit is not to be used for a long period of time.



*1 AC OUTLET(S)

(U.S.A., Canada, China and General models)
..... 2 SWITCHED OUTLETS
1 UNSWITCHED OUTLET
(Europe, U.K. and Australia models)
..... 1 SWITCHED OUTLET

Use these to connect the power cords from your components to this unit.

The power to the **SWITCHED** outlets is controlled by this unit's **STANDBY/ON** switch or the provided remote control transmitter's **SYSTEM POWER ON** and **STANDBY** keys. These outlets will supply power to any connected unit whenever this unit is turned on.
The maximum power (total power consumption of components) that can be connected to the **SWITCHED AC OUTLET(S)** is as follows.

- U.S.A. model: 120W
- Except U.S.A. model: 100W

The power to the **UNSWITCHED** outlet is not controlled by this unit's **STANDBY/ON** switch or the provided remote control transmitter's **SYSTEM POWER ON** and **STANDBY** keys. This outlet will supply power to the connected unit even if this unit is in the standby mode.
The maximum power (total power consumption of components) that can be connected to the **UNSWITCHED AC OUTLET** is as follows.

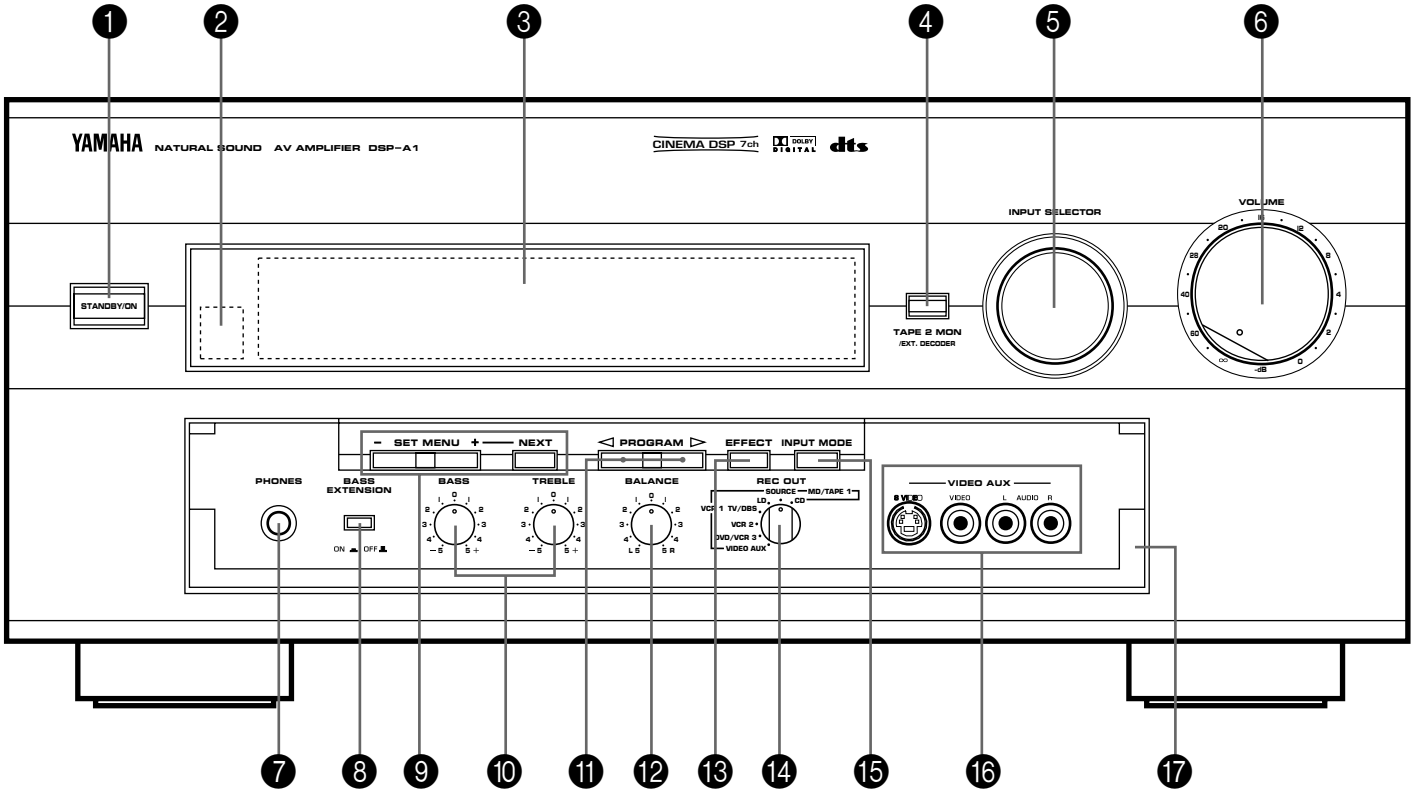
- U.S.A. and Canada models: 180W
- China and General models: 200W

*2 Voltage Selector (China and General Models only)

The voltage selector on the rear panel of this unit must be set for your local main voltage BEFORE plugging into the AC main supply.
Voltages are 110/120/220/240 V AC, 50/60 Hz.

CONTROLS AND THEIR FUNCTIONS

FRONT PANEL



1 STANDBY/ON switch
Press this switch to turn the power to this unit on. Press it again to turn this unit into the standby mode.
* When you press this switch to turn the power on, you will hear a click and a sound of the built-in fan rotating for a moment.

> Standby mode
> In this state, this unit consumes a very small quantity of power to receive infrared-signals from the remote control transmitter.

2 Remote control sensor
Receives signals from the remote control transmitter.

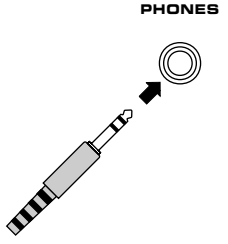
3 Display panel
Shows various information. (For details, refer to page 25.)

4 TAPE 2 MON/EXT. DECODER button
When this button is pressed once or more so that "TAPE2 MONITOR ON" appears on the display, sound source played on the unit connected to the TAPE 2 PLAY/REC AUDIO SIGNAL terminals on the rear of this unit is selected as the input source taking priority of the **INPUT SELECTOR**'s setting.
When this button is pressed once or more so that "EXT. DECODER IN" appears on the display, sound signals input to the EXTERNAL DECODER INPUT terminals on the rear of this unit is selected as the input source taking priority of the **INPUT SELECTOR**'s setting.
When this button is pressed once or more so that the display returns to a normal display mode, the above input sources are canceled.

5 INPUT SELECTOR
Selects the input source that you want to listen to (and watch). The selected source is shown on the display.

6 Master VOLUME control
Simultaneously controls volume level at all outputs: front effect, main, rear, center, and subwoofer. (This does not affect REC OUT level.)
* When the volume is decreased by pressing the **MUTE** key on the remote control transmitter, the indicator on the master **VOLUME** control flashes on and off.

7 PHONES jack
Plug in headphones here for private listening. Sound signals from the main channels only are output here. However, if the Dolby Digital (AC-3) or the DTS is decoded, signals at all channels are distributed to the main channels and output here.



8 BASS EXTENSION switch
When this switch is pressed inward (ON), boosts bass frequency response at the main left and main right channels while maintaining overall tonal balance. If you do not have a subwoofer, the use of this switch will be effective to reinforce the bass frequencies.

9 SET MENU –/+ button
Performs setting changes and adjustments for functions selected by pressing the **NEXT** button.

NEXT button
Selects functions in the SET MENU mode whenever pressed.

10 BASS and TREBLE controls
Adjust low and high frequency response respectively for the left main, right main and center channels only.

11 PROGRAM selector button
Sequentially selects the digital sound field processing programs in the ◅ or ▻ direction.

12 BALANCE control
This control is effective only for the sound from the main speakers.
This control adjusts the balance of the output volume to the left and right main speakers to compensate for sound imbalance caused by speaker location or listening room conditions.

13 EFFECT button
Switches on and off the output from the center, rear and front effect speakers. When switched to off, the sound becomes normal 2-channels.
* Even if the output from the center, rear and front effect speakers is off, when the Dolby Digital (AC-3) or the DTS is decoded, signals at all channels are distributed to the main channels and output from the main speakers.

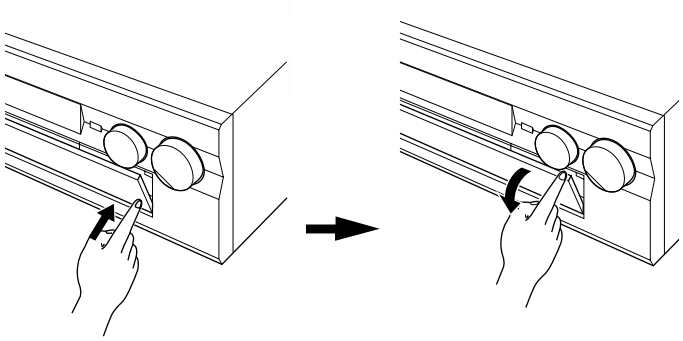
14 REC OUT selector
Selects the source to be recorded to an MD recorder (or tape deck 1) or VCR 1 independently of the setting of the **INPUT SELECTOR**. However, when set to the SOURCE position, the setting of the **INPUT SELECTOR** decides the source to be recorded to an MD recorder (or tape deck) or VCR.

15 INPUT MODE button
Switches the mode of selecting input signals between “AUTO”, “DTS” and “ANALOG” modes for sources that input two or more types of signals to this unit. (Refer to page 41 for details.)
* For LD source, this switches among “AUTO”, “AC-3 RF”, “DTS”, “DIGITAL” and “ANALOG” modes.

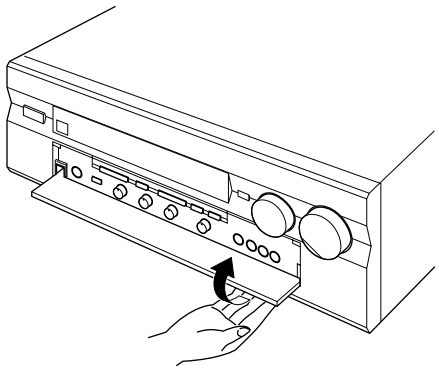
16 VIDEO AUX terminals
Connect an auxiliary video or audio input source unit such as a camcorder to these terminals. If the connected video unit has a S video output terminal, connect it to the S VIDEO terminal to obtain a high resolution picture. The source connected to these terminals can be selected by the **INPUT SELECTOR** and **REC OUT** selector.

17 Control door
When it is not necessary to operate controls inside the control door, close the door.

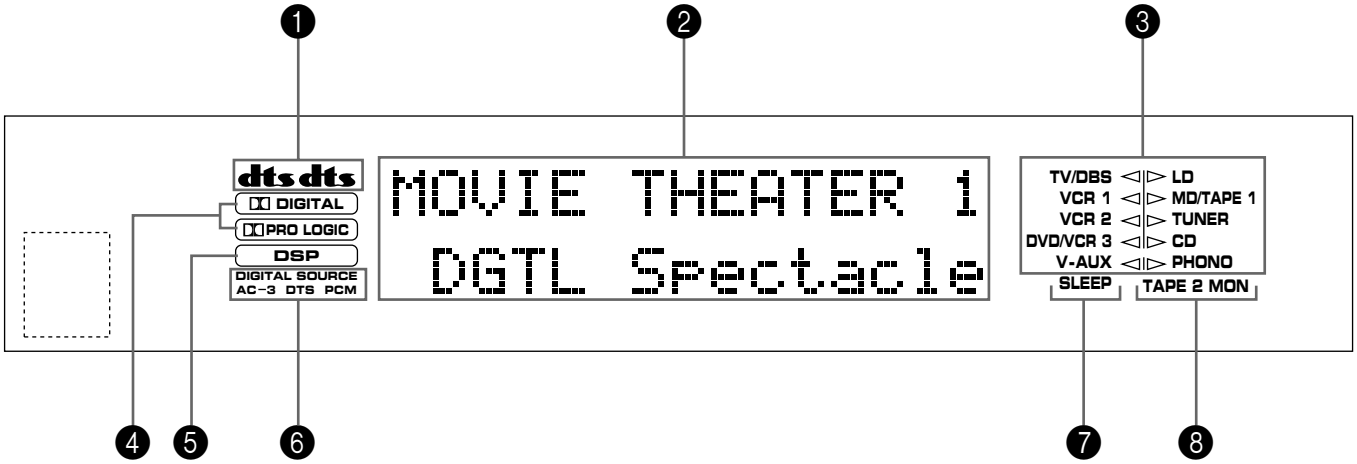
To open the door



To close the door



DISPLAY PANEL



1 dts indicators
When the built-in DTS decoder is on, either dts indicator lights up. Red “dts” indicator lights up when playing a compact disc or laserdisc encoded with the DTS. Orange “dts” indicator lights up when playing a DVD encoded with the DTS.

* On a DVD/LD combi-player, if you play a laserdisc encoded with the DTS after playing a Video-CD, DVD, etc., the orange “dts” indicator may light up.

2 Multi-information display
Shows the currently selected DSP program, or information for several adjustments or setting changes made on this unit.

3 Input source indicators
Show the currently selected input source by the arrow-shaped cursor.

4 DIGITAL and PRO LOGIC indicators
“ DIGITAL” lights up when the built-in Dolby Digital (AC-3) Decoder is on and the signals of selected source encoded with the Dolby Digital (AC-3) is not in 2-channels.
“ PRO LOGIC” lights up when the built-in Dolby Pro Logic Surround Decoder is on.

5 DSP indicator
“DSP” lights up when the built-in digital sound field processor is on.

6 Digital audio input signal indicators
These indicators show the type of digital signal currently input to this unit.
When PCM digital audio signals are input to this unit, “PCM” lights up.
When digital audio signals encoded with the Dolby Digital (AC-3) are input to this unit, “AC-3” lights up.
When digital audio signals encoded with the DTS are input to this unit, “DTS” lights up.

7 SLEEP indicator
Lights up while the built-in SLEEP timer is functioning.

8 TAPE 2 MON indicator
Lights up when the tape deck (or MD recorder etc.) connected to the TAPE 2 PLAY/REC AUDIO SIGNAL terminals on the rear of this unit is selected as the input source by pressing the **TAPE 2 MON/EXT. DECODER** button.

ADJUSTMENTS BEFORE USING THIS UNIT

SELECTING THE OUTPUT MODES SUITABLE FOR YOUR SPEAKER SYSTEM (IN THE “SET MENU” MODE)

This unit provides you with the following functions to distribute respective output signals to suitable speakers in your audio system. When speaker connections are all completed, select a proper position on each function to make the best use of your speaker system.

* For details about the SET MENU mode, refer to pages 32 to 38.

1. SPEAKER SET

- 1A. CENTER SP
- 1B. REAR SP
- 1C. MAIN SP
- 1D. LFE/BASS OUT
- 1E. FRONT MIX
- 1F. MAIN LEVEL

■ DESCRIPTION OF EACH FUNCTION

1A. CENTER SP

Choices: LARGE (LRG)/SMALL (SML)/NONE
Preset position: LRG

LRG: Select this position when your center speaker is approximately the same size as the main speakers.

SML: Select this position when you use a center speaker that is smaller than the main speakers. In this position, low bass signals (below 90 Hz) at the center channel are output from the SUBWOOFER terminals (or the main speakers if the MAIN position is selected on “1D. LFE/BASS OUT”).

NONE: Select this position when you do not have a center speaker. The center channel sound will be output from the left and right main speakers.

1B. REAR SP

Choices: LARGE/SMALL
Preset position: LARGE

LARGE: Select this position if your rear speakers have a high ability for bass reproduction, or a subwoofer is connected to the rear speaker in parallel.
In this position, full range signals are output from the rear speakers.

SMALL: Select this position if your rear speakers do not have a high ability for bass reproduction.
In this position, low bass signals (below 90 Hz) at the rear channels are output from the SUBWOOFER terminals (or the main speakers if the MAIN position is selected on “1D. LFE/BASS OUT”).

1C. MAIN SP

Choices: LARGE/SMALL
Preset position: LARGE

LARGE: Select this position if your main speakers have a high ability for bass reproduction.
In this position, full range signals present at the main channels are output from the main speakers.

SMALL: Select this position if your main speakers do not have a high ability for bass reproduction. However, if your system does not include a subwoofer, do not select this position.
In this position, low bass signals (below 90 Hz) at the main channels are output from the SUBWOOFER terminals (if the SW or BOTH position is selected on "1D. LFE/BASS OUT").

1D. LFE/BASS OUT

Choices: SW/MAIN/BOTH
Preset position: SW

MAIN: Select this position if your system does not include a subwoofer.
In this position, full range signals present at the main channels, signals from the LFE channel and other low bass signals that are selected on "1A. CENTER SP" to "1C. MAIN SP" to be distributed from other channels are output from the main speakers.

SW/BOTH:
Select either the SW or BOTH position if your system includes a subwoofer.
In either position, signals at LFE channel and other low bass signals that are selected on "1A. CENTER SP" to "1C. MAIN SP" to be distributed from other channels are output from the SUBWOOFER terminals.
When the LARGE position is selected on "1C. MAIN SP", in the **SW** position, no signal is distributed from the main channels to the SUBWOOFER terminals, however in the **BOTH** position, low bass signals from the main channels are output to both of the main speakers and the SUBWOOFER terminals.

1E. FRONT MIX

Choices: OFF-7ch/ON-5ch
Preset position: OFF-7ch

OFF-7ch: Select this position if your speaker system includes a pair of front effect speakers.

ON-5ch: Select this position if your speaker system does not include a pair of front effect speakers.
Sound signals at the left and right front effect channels are distributed to the left and right main channels respectively, and output from the main speakers.

1F. MAIN LEVEL

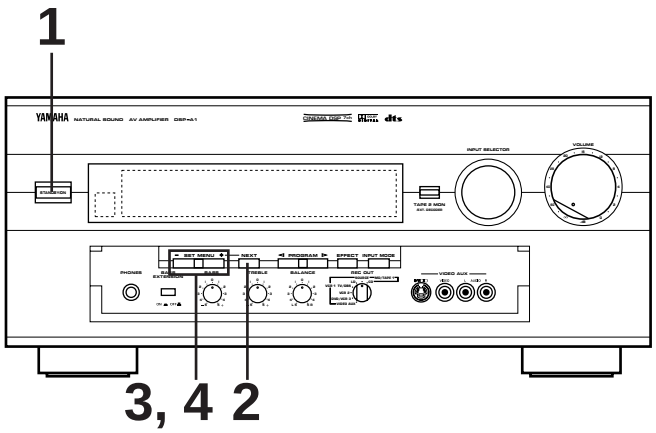
Choices: Normal/–10dB
Preset position: Normal

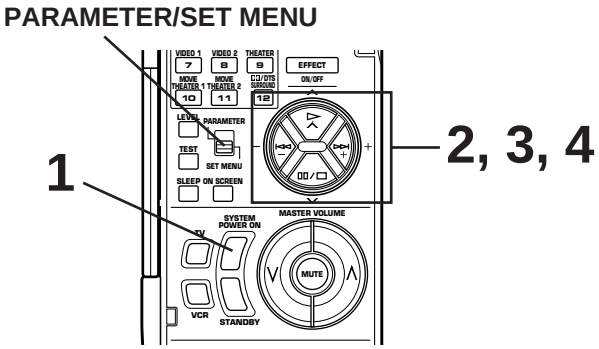
Normal: Normally, select this position.

–10dB: Select this position if the volume levels to the center, rear and/or front effect speakers are lower than the level to the main speakers even though they are adjusted to maximum.
The volume level to the main speakers are decreased by 10 dB, so you can adjust the speaker output level balance properly.

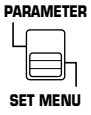
■ METHOD OF CHANGING SELECTIONS

Operations should be made watching information on this unit's display panel or the monitor screen.



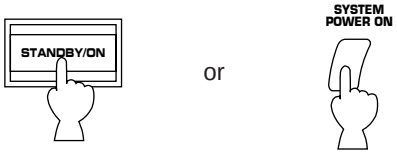


If you will use the remote control transmitter, set the **PARAMETER/SET MENU** switch to the SET MENU position on the remote control transmitter.
Note: Be sure to use the remote control transmitter with the lid open.



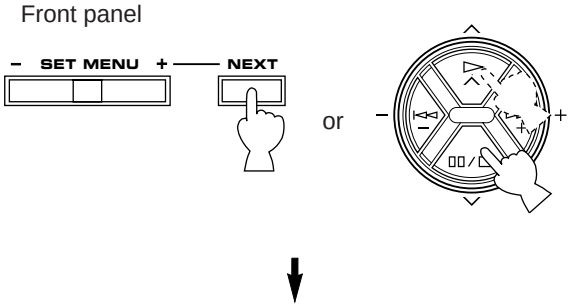
1 Turn the power to this unit on. (If you want to display information on the monitor, turn the power to the monitor on.)

Front panel | Remote control

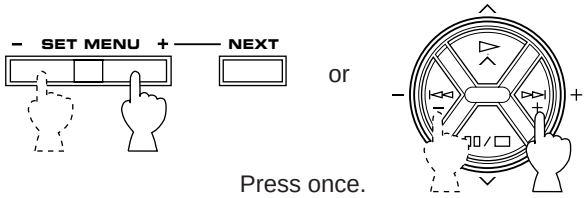


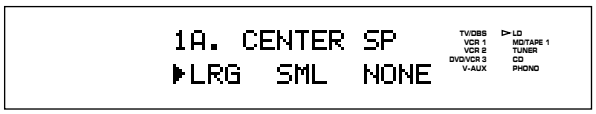
2 Select the title "1. SPEAKER SET" by pressing the button figured below once or more (so that the title appears on the display).

Front panel | Remote control



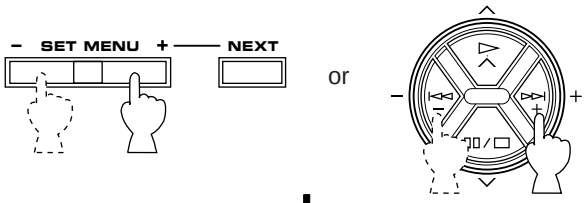
3 Front panel | Remote control

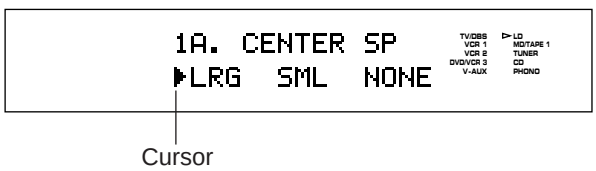




4 Press "+" or "–" once or more so that the arrow-shaped cursor points the position you will select.

Front panel | Remote control





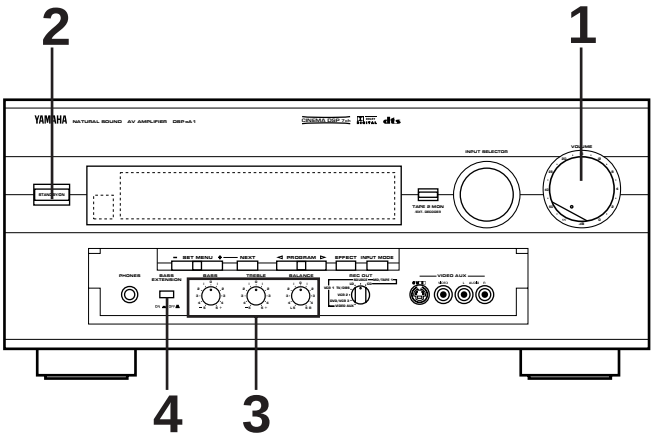
5 In the same way, select a proper position on "1B. REAR SP", "1C. MAIN SP", "1D. LFE/BASS OUT", "1E. FRONT MIX" and/or "1F. MAIN LEVEL".
First select the title of function by following step 2, and then select a proper position by following step 4.

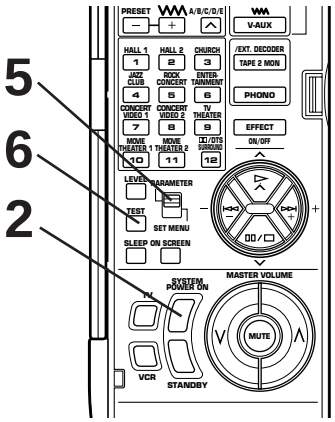
SPEAKER BALANCE ADJUSTMENT

This procedure lets you adjust the sound output level balance between the main, center rear and front effect speakers using the built-in test tone generator. When this adjustment is performed, the sound output level heard at the listening position will be the same from each speaker. This is important for the best performance of the digital sound field processor, the Dolby Digital (AC-3) decoder, the Dolby Pro Logic Surround decoder and the DTS decoder.

The adjustment of each speaker output level should be done at your listening position with the remote control transmitter. Otherwise, the result may not be satisfactory.

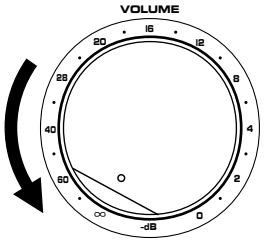
Note: Be sure to use the remote control transmitter with the lid open.





1

Front panel



Set to the "∞" position.

2 Turn the power on.

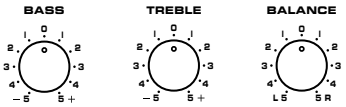
Front panel

or

Remote control

3

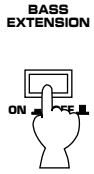
Front panel



Set to the "0" position.

4

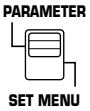
Front panel



Set to the "OFF ( )".

5 Set the **PARAMETER/SET MENU** switch on the remote control transmitter to the PARAMETER position.

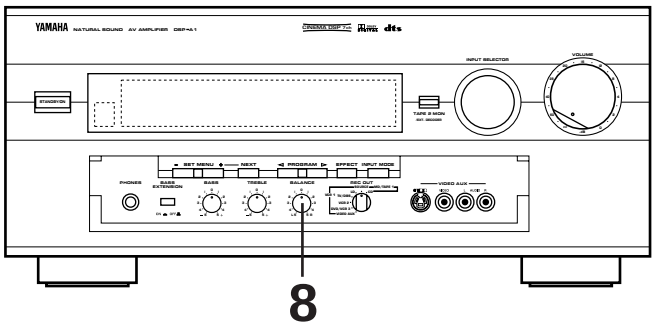
Remote control

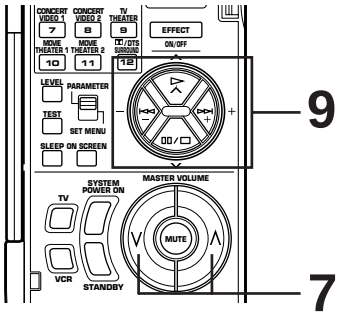


6 Press the **TEST** key on the remote control transmitter so that "TEST DOLBY SUR." appears on the display to enter test mode.

Remote control

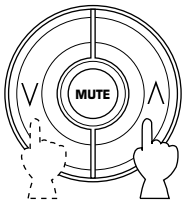
CONTINUED



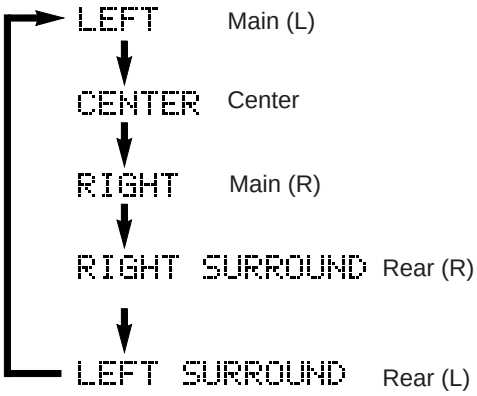


7 Turn up the volume.

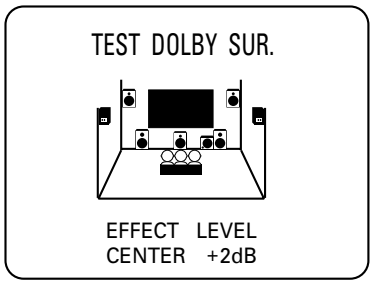
Remote control



You will hear a test tone (like pink noise) from the left main speaker, then the center speaker, then the right main speaker, then the right rear speaker, and then the left rear speaker, for about 2.5 seconds each. The display changes as shown below.



* The state of test tone output is also shown on the monitor screen by an image of audio listening room. This is convenient for adjusting each speaker level.



* If the function “1A. CENTER SP” in the SET MENU mode is set in the “NONE” position, you will hear the center channel test tone from the left and right main speakers.

8 Adjust the **BALANCE** control so that the effect sound output level of the left main speaker and the right main speaker are the same.

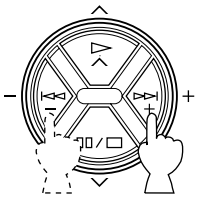
Front panel

9 Adjust the sound output levels of the center speaker and the rear speakers so that they become almost as same as that of the main speakers.

How to adjust:
Pressing the + or – key adjusts the level to the speaker (except the main speakers) currently outputting the test tone.

* Pressing the **+** key raises and the **–** key lowers the level.
* While adjusting, the test tone is fixed on the selected speaker.

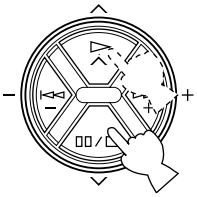
Remote control

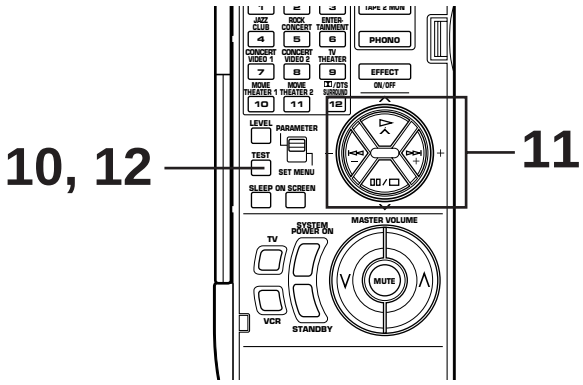


If desired, you can select a speaker to output the test tone by pressing the ∧ or ∨ key once or more so that “CENTER”, “RIGHT SURROUND” or “LEFT SURROUND” appears on the display.

* While holding the ∧ or ∨ key pressed, the test tone is fixed on the selected speaker.
* “CENTER” shows the center speaker is selected, “RIGHT SURROUND” shows the right rear speaker, and “LEFT SURROUND” shows the left rear speaker.
* The output level of the selected speaker can be adjusted by the + or – key.

Remote control

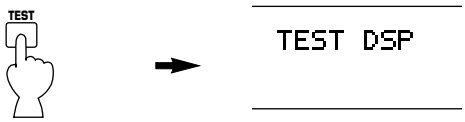




10

For the front effect speaker level adjustment, press the **TEST** key on the remote control transmitter again so that “TEST DSP” appears on the display.

Remote control



A calibration signal should be heard from the main speakers and the front effect speakers in turn.

MAIN Main

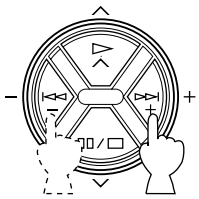
FRONT Front effect

11

Adjust the front effect speaker level by pressing the + or – key so that it becomes almost as same as that of the main speakers.

* While adjusting, the test tone is fixed on the front effect speaker.

Remote control

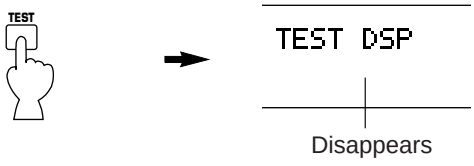


* Pressing the ∧ or ∨ key makes the test tone fix on the left front effect speaker and the right front effect speaker respectively. This is helpful for you to check that each speaker is correctly connected to this unit.

12

When the adjustment is finished, press the **TEST** key once again to cancel the test tone.

Remote control



Notes

- Once you have completed these adjustments, you can adjust whole sound level on your audio system by using the **VOLUME** control (or the **MASTER VOLUME** keys on the remote control transmitter) only.
- If you use external power amplifiers, you may also use their volume controls to achieve proper balance.
- If the function “1A. CENTER SP” in the SET MENU mode is set in the “NONE” position, in step 9, the sound output level of the center speaker cannot be adjusted. This is because in this mode, the center sound is automatically output from the left and right main speakers.
- If there is insufficient sound output from the center and rear speakers, you may decrease the main speaker output level by setting the function “1F. MAIN LEVEL” in the SET MENU mode in the “–10dB” position.

ADJUSTMENTS IN THE “SET MENU” MODE

The following twelve types of functions maximize the performance of your system and expand your enjoyment for audio listening and video watching.

1. SPEAKER SET
- **1A. CENTER SP**
- **1B. REAR SP**
- **1C. MAIN SP**
- **1D. LFE/BASS OUT**
- **1E. FRONT MIX**
- **1F. MAIN LEVEL**

2. LOW FREQ. TEST

3. DLBY DGTL SET
- **3A. LFE LEVEL**
- **3B. D-RANGE**

4. DTS SET
- **4A. LFE LEVEL**

5. CENTER DELAY

6. CENTER GEQ

7. CINEMA EQ

8. PARAMETER INI

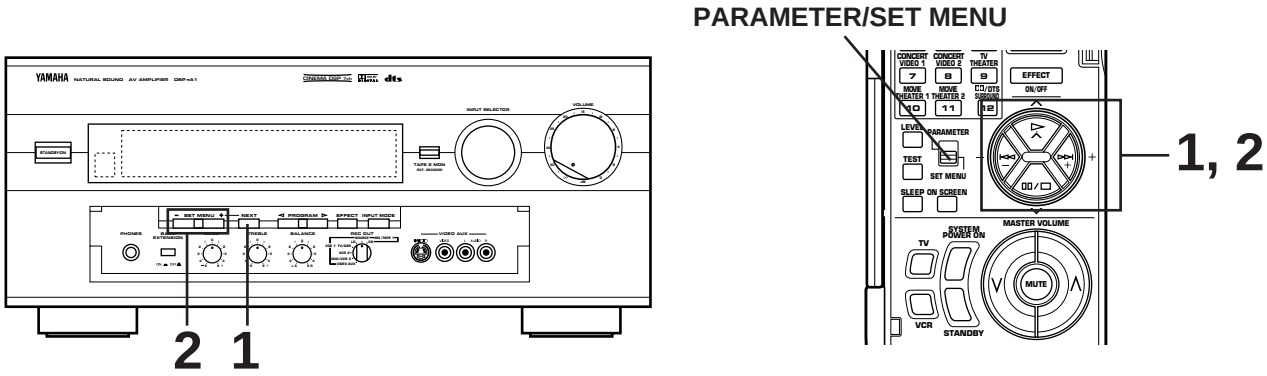
9. MEMORY GUARD

10. VCR3 VIDEO

11. INPUT MODE

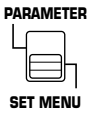
12. DIMMER

■ METHOD OF SETTING CHANGE AND ADJUSTMENT

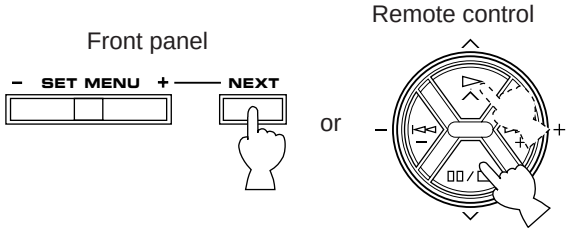


Operations should be made watching information on this unit’s display panel or the monitor screen. If you want to display information on the monitor, turn on the power to the monitor.

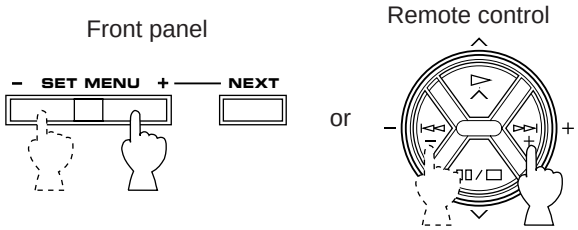
The use of the remote control transmitter is recommended for easier operation.
When using the remote control transmitter, set the **PARAMETER/SET MENU** switch to the SET MENU position on the remote control transmitter.
Note: Be sure to use the remote control transmitter with the lid open.



1 Press once or more until the title of function on which you will make a change appears on the display.



2 Select any desired position or edit parameters on the function.



3 Repeat step 1 and 2 to make a setting change or adjustment on any other function.

Note

A detailed adjusting method by using the remote control transmitter’s keys is described for each function on pages 33 to 38. When you make an adjustment on the front panel, note the following.

- +/– keys on the remote control transmitter are identical with the **SET MENU** +/– button on the front panel.
- ∨ key on the remote control transmitter is identical with the **NEXT** button on the front panel.

In addition, note that the ∧ key on the remote control transmitter can be used to change selections in the order reverse to the ∨ key.

■ DESCRIPTIONS OF THE FUNCTIONS

1. SPEAKER SET (Selecting the output modes suitable for your speaker system)

Refer to pages 26 to 28 for details. (Once you have selected proper modes, you do not have to make a setting change until any alteration is made in your speaker system.)

2. LOW FREQ. TEST (Adjusting subwoofer level by using the test tone)

The internal low frequency test tone generator is useful for adjusting subwoofer level to make the subwoofer sound match the sound of other speakers in your audio system.

Operating procedure

1. After selecting this function (title) in step 1 on page 32, press the + or – key to display the mode for adjustment.

2. Press the ∨ key so that the arrow points to "TEST TONE · · · · OFF". Next press the + or – key to switch to the "ON" position.
   The test tone is heard from the selected speaker(s).

3. Press the ∨ key so that the arrow points to "OUTPUT · · · ·". Next press the + or – key to select the speaker whose sound you want to compare with the subwoofer sound. The test tone is output from the selected speaker.

   * Adjust the **MASTER VOLUME** keys so that the test tone can be heard at your desired listening level.
   * If "SUBWOOFER" is selected, the test tone below 90 Hz is output from the subwoofer.
   * The test tone will not be necessarily output from only the selected speaker(s). The output mode of the test tone depends on the settings on "1. SPEAKER SET" in the SET MENU mode.
   * Even if a source is being played back, the test tone is output instead of the source sounds.

4. Press the ∨ key so that the arrow points to "FREQ. · · · · · · · 88 Hz". To confirm that the subwoofer sound matches the sound of other speakers, change the frequency of test tone one by one by pressing the + or – key. (Frequency can be changed from 35 Hz to 250 Hz, and last, all range (35–250 Hz) of frequencies are output.) **Adjust subwoofer level with the control on the subwoofer** so that the subwoofer sound matches the sound of other speakers in any range of low frequencies.

Note

This low frequency test tone can also be applied to check the bass response in your room. For the best bass condition, bass sound must be heard definitely at any position in your room. If not, change the setting of subwoofer or furniture in your room.

3. DLBY DGTL (DOLBY DIGITAL) SET

Adjusting method

After selecting the title "3. DLBY DGTL SET" in step 1 on page 32, press the + or – key to display the title "3A. LFE LEVEL". To select the title "3B. D-RANGE", press the ∨ key. (To select the title "3A. LFE LEVEL" again, press the ∧ key.) Then make a setting change or adjustment with the + or – key.

3A. LFE LEVEL (Adjusting the output level at the LFE (low frequency effect) channel)

- **Control range: –20 dB to 0 dB**
  Preset value: 0 dB
- This adjustment is effective only when the Dolby Digital (AC-3) is decoded and the signals of selected source encoded with the Dolby Digital (AC-3) contain LFE signals.

Adjusts the output level at the LFE (low frequency effect) channel. If the LFE signals are mixed with signals at other channels to output them from the same speakers, the ratio of LFE signal level to the level of other signals are adjusted. (Refer to page 5 for details about the LFE channel.)

3B. D-RANGE (Adjusting dynamic range)

- **Choices: MAX/STD/MIN**
  Preset position: MAX
- This adjustment is effective only when the Dolby Digital (AC-3) is decoded.

MAX: "Dynamic range" is the difference between the maximum level and the minimum level of sounds. Sounds on a movie originally designed for movie theaters feature very wide dynamic range.
Dolby Digital (AC-3) technology can bring the original sound track into a home audio format with this wide dynamic range unchanged.
In this position, a source encoded with the Dolby Digital (AC-3) is reproduced in the original sound track's wide dynamic range providing you with powerful sounds like a movie theater.
Selecting this position will be more ideal if you can listen to a source in a high output level in a room specially soundproofed for audio/video enjoyment.

STD (Standard):
Powerful sounds of extremely wide dynamic range are not always suitable for home use. Depending upon the condition of your listening environment, it may not be possible to increase the sound output level as high as a movie theater. However, in a level suitable for listening in your room, the low level parts of source sound cannot be heard well because they will be lost among noises in your environment.

Dolby Digital (AC-3) technology also made it possible to reduce an original sound track's dynamic range for a home audio format by "compressing" the data of sound.

In this position, a source encoded with the Dolby Digital (AC-3) is reproduced in the "compressed" dynamic range of the source suitable for low level listening.

If you desire, you can adjust the dynamic range manually only when the STD position is selected.

■ H-LEVEL CUT (High Level Cut Scale)

Control range: 0.0 to 1.0
Preset value: 1.0

Adjusts the dynamic range of high level signals of source. The larger the value, the more the range is reduced. The smaller the value, the range is more widened.

■ L-LEVEL BST (Low Level Boost Scale)

Control range: 0.0 to 1.0
Preset value: 1.0

Adjusts the dynamic range of low level signals of source. The larger the value, the more the range is widened. The smaller the value, the range is more reduced.

Adjusting method
Select the title H-LEVEL CUT or L-LEVEL BST by pressing the ∨ or ∧ key and adjust its value by pressing the + or – key.

MIN: In this position, dynamic range is more reduced than in the STD position. Selecting this position will be effective when you must listen to a source in extremely low level.
* In this position, it may happen that sound is output faintly or not output normally depending on a source. In that case, select the MAX or STD position.

4. DTS SET

Adjusting method
After selecting the title "4. DTS SET" in step 1 on page 32, press the + or – key to display the title "4A. LFE LEVEL". Then adjust its level with the + or – key.

4A. LFE LEVEL (Adjusting the output level at the LFE (low frequency effect) channel)

- **Control range: –10 dB to 10 dB**
  Preset value: 0 dB
- This adjustment is effective only when the DTS is decoded and the signals of selected source encoded with the DTS contain LFE signals.

Adjusts the output level at the LFE (low frequency effect) channel. If the LFE signals are mixed with signals at other channels to output them from the same speakers, the ratio of LFE signal level to the level of other signals is adjusted. (Refer to page 6 for details about the LFE channel.)

5. CENTER DELAY (Adjusting the delay of center sounds (dialog etc.))

- **Control range: 0 ms to 5 ms (in 1 ms step)**
  Preset value: 0 ms
- This adjustment is effective only when the Dolby Digital (AC-3) or the DTS is decoded and the signals of selected source encoded with the Dolby Digital (AC-3) or the DTS contain center channel signals.

Adjusts the delay between the main sounds (at the main channels) and dialog etc. (at the center channel).
The larger the value, the later the dialog etc. is generated.
In your audio system, the distance from the center speaker to your listening position may be shorter than the distance from the left or right main speaker to your listening position. In that case, sounds from the left main, center and right main speakers can reach your listening position at the same time by delaying the sound from the center speaker.

6. CENTER GEQ (Adjusting the Center Channel Graphic Equalizer)

The built-in five band graphic equalizer is used to tailor, over a ±6 dB range, the overall output frequency response of the center channel. The five bands cover the complete audible sound spectrum and are centered on 100 Hz, 300 Hz, 1 kHz, 3 kHz and 10 kHz frequencies. Adjustment should be done to each frequency individually.

Adjusting method
After selecting the function (title) in step 1 on page 32, press the + or – key to display the condition of the equalizer. Then select a frequency with the ∨ or ∧ key and adjust its level with the + or – key.

* Adjustment can be made by monitoring sounds using the test tone. To use the test tone, press the **TEST** key so that "TEST DOLBY SUR." appears on the display before making adjustment. The test tone is output from the center speaker(s).

7. CINEMA EQ (Adjusting the tonal balance of speakers)

It is difficult to balance tonal quality of the main, center, front effect and rear effect speakers, because they may be different in type and size, and their setting positions and heights are also different. The built-in CINEMA Equalizer enables you to balance tonal quality of the speakers easily by adjusting tonal quality of the main/center, front effect and rear effect channels individually.

This is also useful to compensate for loss of tonal response of the main and center speakers when these speakers are placed behind the projection screen (if you use a projector in place of a TV).

The CINEMA Equalizer consists of the High-shelving equalizer (HIGH) and the Parametric equalizer (PEQ). The High-shelving equalizer changes high frequency characteristics smoothly, and the Parametric equalizer boosts or cuts any selected frequency smoothly.

Adjusting method
1. After selecting this function (title) in step 1 on page 32, press the + or – key.

2. Select the channels on which you will make adjustments by pressing the ∨ or ∧ key so that the arrow points the corresponding title.

   L, C, R ..... Left main, center and right main channels
   FRNT EFCT ..... Front effect channels
   REAR EFCT ..... Rear channels

3. Press the + or – key to turn the equalizer for the selected channels to "ON".

4. Press the ∨ key repeatedly until the title of adjusting mode (**7A. L,C,R EQ/7B. FRNT EFCT EQ/7C. REAR EFCT EQ**) for the channels on which you will make adjustments is displayed.
   * The adjusting mode will not be displayed for the channels that are set to "OFF" in step 2.

5. Make adjustments for the selected channels.
   Select the item with the ∨ or ∧ key and change the value with the + or – key.

   HIGH: FRQ..... Selects a turnover frequency of the High-shelving equalizer.
   GAIN ..... Adjusts the maximum equalizing level.
   PEQ: FRQ..... Selects a frequency you will boost or cut.
   GAIN ..... Adjusts the equalizing level on the selected frequency.

* Adjustment can be made by monitoring sounds using the test tone. To use the test tone, press the **TEST** key so that "TEST DOLBY SUR." or "TEST DSP" appears on the display. The test tone is fixed on the channels on which you make an adjustment and output from the corresponding speakers.

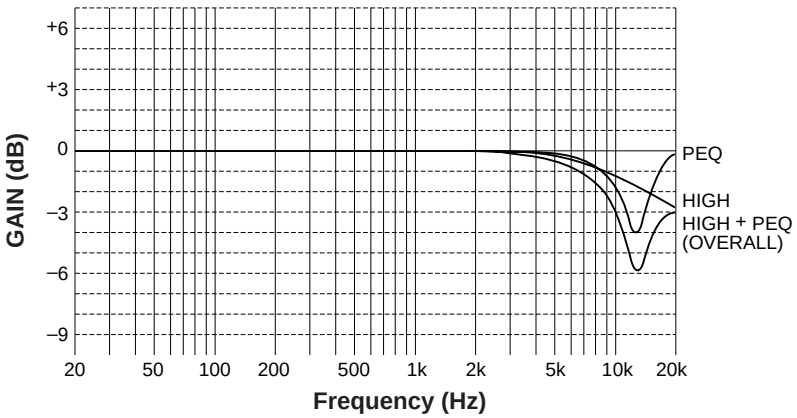
It is recommended to make these adjustments together with the tonal quality adjustment of the center speaker on the function "6. CENTER GEQ".

Note
Excessive increase of the GAIN level may cause an overload. It is recommended to adjust the GAIN level so that it becomes lower than the preset value.

■ Preset value of the CINEMA Equalizer

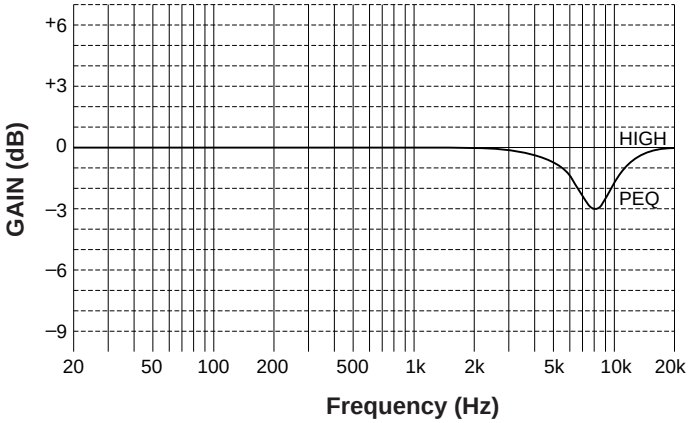
L, C, R EQ

HIGH: FRQ ..... 12.7 kHz
GAIN ..... –3 dB
PEQ: FRQ ..... 12.7 kHz
GAIN ..... –4 dB



FRONT, REAR EFCT EQ

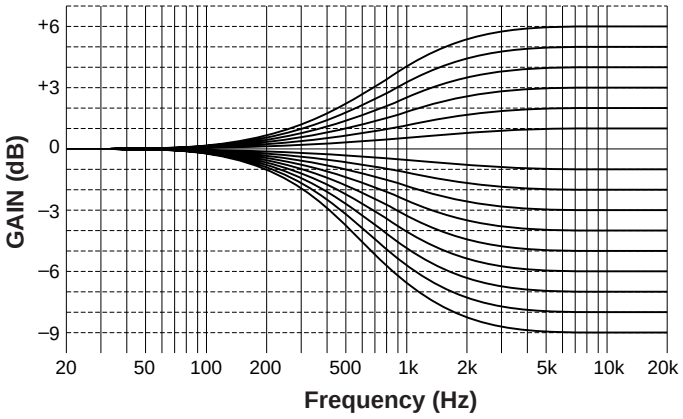
HIGH: FRQ ..... 12.7 kHz
GAIN ..... 0 dB
PEQ: FRQ ..... 8.0 kHz
GAIN ..... –3 dB



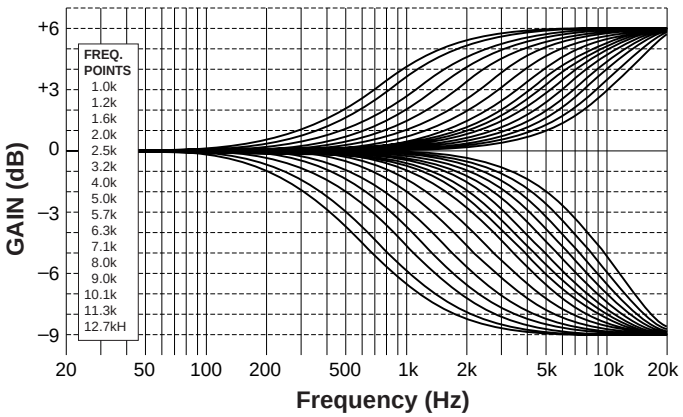
■ Frequency characteristics

The following curves show frequency characteristics when the High-shelving equalizer (HIGH) is adjusted at the indicated values.

HIGH: FRQ ..... 1.0 kHz
GAIN ..... +6 dB to –9 dB

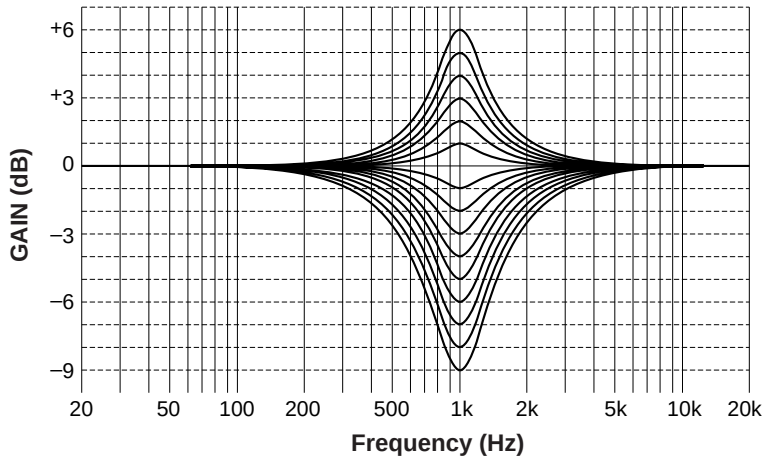


HIGH: FRQ .... 1.0 kHz to 12.7 kHz
GAIN ..... +6 dB/–9 dB

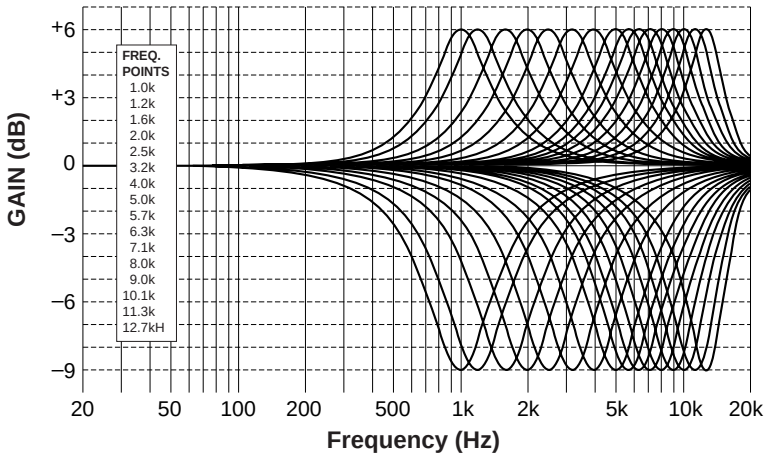


The following curves show frequency characteristics when the Parametric Equalizer (PEQ) is adjusted at the indicated values.

PEQ: FRQ ..... 1.0 kHz
GAIN ..... +6 dB to –9 dB



PEQ: FRQ ..... 1.0 kHz to 12.7 kHz
GAIN ..... +6 dB/–9 dB



8. PARAMETER INI (Initializing parameters on a DSP program)

You can initialize all parameter settings on a DSP program. Note that a DSP program has two or three subprograms; all parameters on both subprograms are initialized by this operation.

Initializing method
After selecting this function (title) in step 1 on page 32, press the + or – key to display the DSP program numbers (1 – 12). A program number whose parameters has been changed is marked with "*". Press a DSP program selector key corresponding to the program number of which parameters you want to initialize. When initialized, the "*" mark will disappear.

9. MEMORY GUARD (Locking DSP parameters and other adjustments)

If you wish to prevent accidental alteration to DSP parameters or other adjustments on this unit, select "ON". In this position, they are locked and cannot be changed. The following functions on this unit can be locked by this operation.

- DSP parameters
- Other functions in the "SET MENU" mode
- **ON SCREEN** display key
- **LEVEL** key
- **TEST** key

10. VCR 3 VIDEO (Switching the DVD/VCR 3 VIDEO OUT terminal to a second monitor out terminal.)

If you wish to connect a second monitor TV (or a projector) to this unit, select “MONTR” position. The DVD/VCR 3 VIDEO OUT terminal (and S VIDEO terminal also) is switched to a second monitor out terminal, so you can connect this terminal to the video input terminal of another monitor TV.

Notes

- Even in the “MONTR” position, the DVD/VCR 3 VIDEO IN terminal can be used as a normal video signal input terminal and the DVD/VCR 3 AUDIO SIGNAL IN/OUT terminals as normal audio input/output terminals.
- If using the DVD/VCR 3 terminals for connecting a third video cassette recorder only, be sure to select “REC OUT” position.
  If the picture on the monitor is disturbed while the third video cassette recorder is functionning, “MONTR” position may be selected. If so, select “REC OUT” position.

11. INPUT MODE (Selecting the initial input mode of the sources connected to the TV/DBS and DVD/VCR 3 input terminals)

For the sources connected to the TV/DBS and DVD/VCR 3 input terminals of this unit only, you can designate the input mode that is automatically selected when the power of this unit is switched on.

AUTO: In this position, the AUTO input mode is always selected when the power of this unit is switched on.
LAST: In this position, the input mode you have selected the last time is memorized and will not be changed even if the power of this unit is switched on.

* Refer to page 41 for details about switching the input mode.

Operating method
After selecting this function (title) in step 1 on page 32, press the + or – key. Next select the input source TV/DBS or DVD/VCR 3 by pressing the ∧ or ∨ key so that the arrow points to its name, and then select the AUTO or LAST mode by pressing the + or – key.

12. DIMMER (Changing brightness of the display panel)

You can adjust brightness of the display panel in five degrees.